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November 1964

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**EVALUATIONS OF SOVIET
SURFACE-TO-SURFACE
MISSILE DEPLOYMENT
15TH REVISION**

**A Report of the Deployment Working Group
of the
Guided Missiles and Astronautics Intelligence Committee**

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GUIDED MISSILES AND ASTRONAUTICS INTELLIGENCE COMMITTEE
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NOTE: All correspondence relative to this report should be directed to the
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PREFACE

This report, published bimonthly by the GMAIC Deployment Working Group (DWG), provides a comprehensive, ready-reference listing of all ICBM, IRBM, and MRBM deployment locations, types of site configurations, photographic references, estimated construction and operational status, and other evaluations by the DWG. These data constitute the majority view of the DWG membership, and may not correspond precisely to individual assessments by each member. Additional data may be added to future revisions.

Dissemination of the report was previously limited to holders of the DWG report, Soviet Surface-to-Surface Missile Deployment. Because the information contained herein is both supplemental and self-sustaining, distribution will no longer be limited to holders of the above report.

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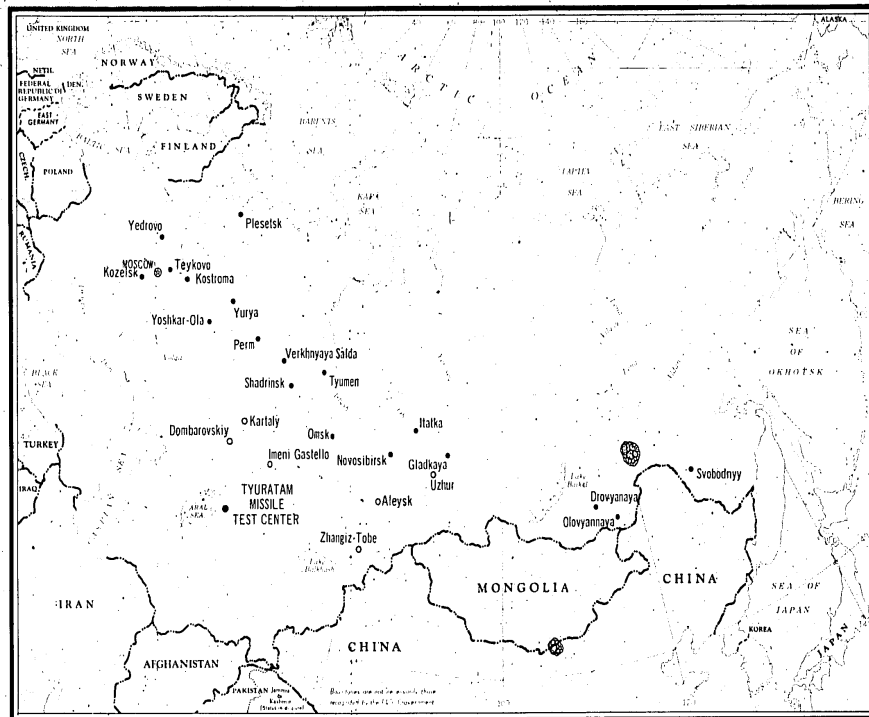


FIGURE 1. DEPLOYMENT OF SOVIET ICBM COMPLEXES.

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INTRODUCTION

This report is the 15th Revision of Evaluations of Soviet Surface-to-Surface Missile Deployment prepared by the Deployment Working Group of the Guided Missiles and Astronautics Intelligence Committee. The 14th Revision, dated 1 September 1964 and disseminated under control number [redacted] can be destroyed in accordance with existing instructions for handling TALENT-KEYHOLE and COMINT materials.

[redacted] and continuing analysis of previous missions and other sources have provided additional information on the Soviet strategic ballistic missile deployment program. The new data are reflected in Table 1 and in the estimated operational status shown in Tables 2, 3, and 4. Cutoff date for information contained in this report is [redacted]

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SOVIET ICBM DEPLOYMENT

The most significant development in Soviet ICBM deployment since our last revision is the identification of 5 new single-silo complexes, at Aleysk (52-29N 82-43E), Dombarovskiy (51-00N 59-48E), Imeni Gastello (51-07N 66-07E), Kartaly (53-03N 60-34E), and Uzhur (55-17N 89-49E). Single-silo sites at these complexes range from 2 to 6 in number. In addition, 3 new single-silo sites have been identified at Zhangiz-Tobe, bringing to 5 the total at this previously identified complex. Also significant is the identification of 2 probable rail-served soft sites at Plesetsk, the abandonment of a Type IIIA hard site at Yedrovo, and the assessment of Launch Site G8/G9 at Tyuratam as a hardened site instead of a soft configuration as previously estimated.

CURRENT DEPLOYMENT

The number of identified ICBM complexes is now 24, with search for new single-silo locations continuing on a priority basis. See Figure 1 for locations of deployed ICBM complexes.

The 24 complexes now contain a total of 269 confirmed and probable launchers, of which 150 are soft and 119 are hard. Included in the

hard launchers are 35 single-silo configurations. Eleven of the complexes contain both hard and soft launchers, 4 contain only soft, and 9 have hard silos only. The number of sites identified at individual complexes continues to range from a low of one at Omsk to a high of 11 at Yurya. With the exception of the 2 new probable soft sites at Plesetsk and the previously reported 6 single-silo configuration at Olovyannaya, no new ICBM site construction has been firmly identified at the 18 older complexes since September 1963.

Of the 269 identified launchers, 197 are considered to be operational, including 51 in a hard configuration. In addition, we believe that 19 of the 35 confirmed launchers at the Tyuratam Missile Test Center, including 6 hard, are operational. However, we judge that these R&D launchers are not normally available for operational use, although varying numbers of them could be so utilized, depending on the amount of advance notice.

The ICBM launch sites have been designated by type as shown and explained in Figure 2.

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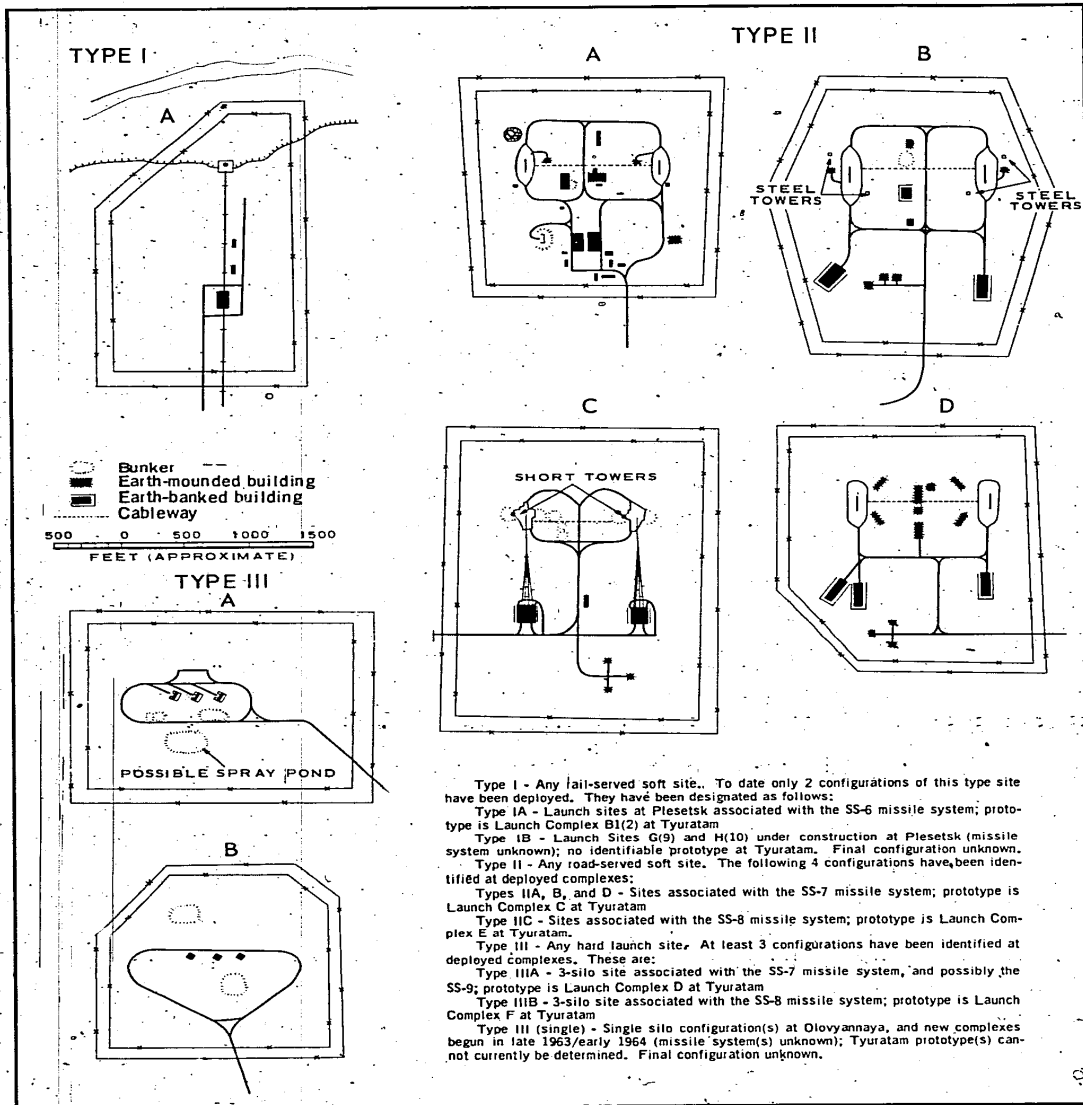


FIGURE 2. TYPICAL CONFIGURATIONS OF ICBM LAUNCH SITES, AND EXPLANATION OF TYPES.

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Evaluation of all evidence received since our last revision has resulted in changes at the following complexes:

ADDITIONS:

ALEYSK (New complex), Launch Sites A-F (1-6), Type III (single), under construction

DOMBAROVSKIY (New complex), Launch Sites A-E (4,3,2,1,6) Type III (single), under construction

IMENI GASTELLO (New complex), Launch Sites A-E (1-15), Type III (single), under construction

KARTALY (New complex), Probable Launch Sites A(1) and B(2), Type III (single), under construction; possible Launch Site C, Type III (single), under construction

PLESETSK, Probable Launch Sites G(9) and H(10), Type IB, under construction

UZHUR (New complex), Launch Sites A-F (1-6), Type III (single), under construction

ZHANGIZ-TOBE, Launch Sites C(3), D(4), and E(5), Type III (single), under construction

DELETIONS:

YEDROVO, Launch Site H(9), Type IIIA, abandoned

SINGLE-SILO COMPLEXES

The 6 single-silo complexes identified to date (excluding Launch Group D at the Olovyan-

naya Complex) now contain a total of 29 confirmed and probable launch silos in early and midstages of construction. Total silos within the individual complexes range from a low of 2 (plus one possible) at Kartaly to a high of 6 at Aleysk and Uzhur.

Our knowledge of the extent and pace of the single-silo deployment program is limited in many respects, but several broad observations can be made. All 6 complexes are rail served; and all are located in the south-central USSR in a belt generally south of that containing the 18 older complexes. The earliest construction at any of the single-silo complexes began in late 1963, following the cessation of construction starts of older site configurations and abandonment of several that were in an early stage of construction. Construction of the first silos probably commenced about January 1964, and, if our current estimate that construction time will approximate 15 months is correct, these will be operational by the second quarter of 1965. All single-silo complexes identified to date should be complete by the end of 1965.

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Aleysk Complex

This complex currently contains a complex support facility, a probable rail-to-road transfer point, and 6 silos, all in a midstage of construction (Figure 3). The complex can be negated in December 1963 [redacted].

The first launch site was under construction in February 1964 [redacted] although no work had been begun on the complex support facility at that time.

Dombrovskiy Complex

This complex was not present in September 1963 [redacted]. First coverage was obtained in June 1964, when 2 launch sites were observed on both [redacted].

The complex currently consists of a complex support facility, 4 confirmed single silos in a midstage of construction, and a probable 5th silo in an early stage (Figure 4). Launch Site B (3) is secured by a perimeter fence which forms a pattern similar to that at Launch Complex I (14) at Tyuratam. The fenced area is large enough to contain an interferometer, but none is yet under construction.

Imeni Gastello Complex

Imeni Gastello, the most recently identified complex, was first observed in June 1964 [redacted].

Although the lack of prior coverage precludes a firm negation date, construction status on available photography indicates that work on the complex was begun early in 1964. No coverage of this complex has been obtained since July 1964. At that time it consisted of a complex support facility and 5 single silos, all in a midstage of construction (Figure 5).

Kartaly Complex

This probable single-silo complex was first visible on June 1964 photography [redacted].

It consists of a probable complex support facility and 2 probable and one possible launch site, all in an early stage of construction (Figure 6). Construction was probably initiated after February 1964, although only the probable complex support facility and probable Launch Site B(2) can be negated on [redacted].

The probable complex support facility consists of 2 groups of buildings and a candelabra of 4 rail sidings; a nearby rail spur extends to a point which may be the location of a rail-to-road transfer point. Probable Launch Sites A(1) and B(2) consist of small secured areas with several small buildings and evidence of nearby excavations. Possible Launch Site C consists of a larger secured area and a small excavation.

Uzhur Complex

[redacted] in September 1964 revealed a new ICBM complex under construction near Uzhur, approximately 110 nautical miles southwest of Krasnoyarsk. The complex consists of a complex support facility, a possible rail-to-road transfer point, and 6 single-silo launch sites, all but one in a midstage of construction (Figure 7). The complex support facility and Launch Sites B(2) and D(4) were in an early stage of construction in February 1964 [redacted].

Zhangiz-Tobe Complex

[redacted] in September 1964 revealed 3 new single-silo launch sites under construction at Zhangiz-Tobe (Figure 8), bringing to 5 the total sites at this complex. Launch Site C(3), previously carried as an unidentified area of activity, first appeared in June 1964 [redacted] and can be negated in February 1964 [redacted]. This site is currently in a

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midstage of construction. The newly identified Launch Site D(4) can be negated on [] in June, 1964. It is in a midstage of construction and consists of a silo under construction within a U-shaped excavation. Launch Site E(5), now in an early construction stage, consists of a U-shaped excavation. This site can be negated in June 1964 []

[] also revealed that Launch Sites A(1) and B(2) had progressed to midstage, and that about 35 buildings have been added to the complex support facility (Figure 9) since June 1964 []

⊙ OLOVYANNAYA COMPLEX

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Olovyannaya remains the only one of the 18 older complexes at which single-silo deployment has been identified. [] in September [] in October 1964 revealed that construction is continuing at Launch Group D (4-10), which includes the 6 single-silos reported in our 14th Revision. Launch Sites B(2) and C(3), both Type IIIA, are in a late stage of construction and nearing completion. No change was observed at Launch Site A (1), a completed Type IIIA configuration.

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TYPE IIIA SITES

[] in October 1964 revealed that Yedrovo Launch Site H(9), a Type IIIA, was abandoned in a midstage of construction. We had been carrying this site as operational, based on construction timing, although it had not been observed clearly since September 1963 [] We suspect that 2 uncompleted sites, Kostroma H(8) and Gladkaya E(6), may have suffered a similar fate, but we are awaiting good quality photographic coverage before dropping them from the ICBM site inventory.

Construction of the remaining 9 uncompleted Type IIIA sites is continuing at an accelerated pace, however, and several will probably be completed before the end of 1964. If so, construction of these sites, all of which were begun in 1963, will have been accomplished in considerably less than the 22- 24-month average we observed for earlier sites of this type, all of which are currently operational.

PLESETSK COMPLEX

New Probable Launch Sites

[] in September 1964 revealed 2 apparently identical probable launch sites, designated G(9) and H(10), under construction east of Launch Site D at Plesetsk. []

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[redacted] in October 1964 furnished further details (Figure 10). These appear to be rail-served soft sites, the rails being mirror images and forming a wishbone configuration. Each site consists of 3 excavations on a north-south axis, the center one measuring 115 by 100 feet; foundations or footings for buildings are under construction in each excavation. On either side of each site is a relatively deep, notched excavation approximately 180 by 70 feet. At probable Launch Site G(9), linear trenching connects the outer notched excavation with the northernmost and southernmost building excavations. At probable Launch Site H(10), the rail track has been extended into the launch site and terminates in 3 deadend spurs.

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Launch Site F

In our last revision we reported that construction was underway on a unique soft launch site at Plesetsk. We pointed out that this 2-pad configuration appeared to resemble Launch Site 5C1 at the Kapustin Yar Missile Test Center rather than any known ICBM configuration. [redacted] in September 1964 showed that this site is now complete, with well-defined pads and a road network (Figure 11). There is a missile-ready building, and at least 3 other structures along or near the access road. On [redacted] October 1964, each pad had an unidentified circular object near the center.

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KOZELSK COMPLEX

Launch Site F(6) at Kozelsk appeared to be

complete on [redacted] in October 1964, and we are now carrying the site as operational. We are now carrying all SS-8 sites, both hard and soft, as complete and operational.

PERM COMPLEX

In our last revision we reported an area of unidentified activity at the Perm ICBM Complex which was suspect for a single-silo launch site. Subsequent coverage indicates that this facility is probably a communications or radar site, and we are dropping it from the suspect list.

TYURATAM MISSILE TEST CENTER

Test Range Facilities

[redacted] in August 1964, and [redacted] in September 1964 provided fair-to-excellent coverage of the launch facilities at Tyuratam. Highlights included the addition of L-shaped interferometers at Launch Complexes I(14) and G; the association of Launch Areas A3(15) and B2(16) with Launch Complex I(14); new construction activity at Launch Complex B; the initiation of construction of a possible launch area at Complex J; and the identification of missiles or missile components at several launch complexes.

At Launch Complex A on [redacted] (August 1964), a probable missile component approximately 105 feet long was observed on a rail car adjacent to Pad A1(1). Again on [redacted] (September 1964), a linear object approximately [redacted] was located behind the same pad. No significant change was noted at Pad A2 on any of these missions. Launch Site A3(15) is now confirmed as a single-silo in a midstage of construction. The excavation contains a silo 50 to 60 feet square, with a circular opening approximately 30 feet in diameter (Figure 12). The silo has not yet been brought up to ground level. A linear scar extends from this

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launch site to Launch Complex I(14).

At Launch Complex B (Figure 13), nothing significant has been noted at Pad B1(2) since our 14th Revision.

(August 1964) confirmed that Launch Site B2(16) is a single-silo launch facility, and revealed a straight-line earth scar, possibly a cable ditch, extending southwestward from the launch site to Launch Complex I(14). When last observed

(September 1964), the site was in a midstage of construction, with the silo already up to ground level. The silo is 50 to 60 feet square, with a circular opening approximately 30 feet in diameter. A building approximately 100 feet long is under construction north of the silo, and within the loop road which has been surfaced. Launch Site B-3(17), a single oval launch pad and loop road similar to Pad C3 at Launch Complex C, remains in a late stage of construction. We still cannot determine the function of this launch site.

(September 1964) revealed an area of new construction activity approximately 1,000 feet east of Pad B1(2), and within the secured area. It consists of one rectangular and 2 square excavations. While we are not as yet assigning a launch function to this new activity, we note that the early construction pattern is similar in some respects to that at the new probable soft Launch Sites G(9) and H(10) at Plesetsk.

At Launch Complex C(3), a probable missile or missile components were observed on 2 separate occasions (Figure 14). In August 1964 a probable missile approximately 100 feet long was observed in a horizontal position on Pad C1. In September 1964 a light-toned linear object approximately 100 feet long was visible on the apron between the assembly/checkout and missile-ready buildings.

No significant change in facilities has been noted at Launch Site D1(4), Launch Complex D,

since our last revision. Launch Site D2(9) was still in a late stage of construction when last observed on September 1964.

All 3 silo covers were open, and the site did not have the clean appearance of a completed launch site (Figure 15). Ditching and small excavations in the southern part of the secured area indicate that further construction is in progress. The associated L-shaped electronic facility appears to be complete.

No significant change in facilities is evident at Launch Complex E(6). However, missile or possible missile components were observed on 3 separate occasions. On (August 1964), a probable missile approximately long and 10 feet wide was erected on Pad E3 (Figure 16). Also, an unidentified object approximately 90 feet long was positioned adjacent to the west end of the ready building serving Pad E1. On (September 1964) an unidentified linear object approximately 85 feet in length was apparent on the rail in front of the ready building associated with Pad E1.

a few days later, showed that this object was still in place, and that a missile was erected on Pad E3 (Figure 16).

No change in facilities at Launch Complex F(5) has been noted since our last revision.

Excellent coverage of Launch Complex G indicates that construction activity at the various sites comprising this complex is progressing at a rapid pace. We reported in the 14th Revision that Launch Site G1/G2(7) was complete.

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[redacted] The non-stereo KH-7 coverage [redacted] (August 1964) indicates that at least 3 pairs of rails extend from the G2 ready building and converge as they approach the launch pad (Figure 17). Four railcars were visible on these rails. On [redacted] (September 1964) the gantry associated with Pad G1 is in the center of the pad, although it cannot be determined whether or not there is a missile within the gantry.

We are still carrying Launch Site G3/G4 (11) in a late stage of construction, although it appears that Pad G4 is complete [redacted] (August 1964). Pad G3, however, is still under construction, with construction materials and equipment clearly evident on this and subsequent missions. [redacted] also revealed an L-shaped electronic facility under construction behind the launch site. The legs of the L are approximately 1,100 feet long. On [redacted] (September 1964) a probable missile component (or mock-up) is visible on the rail adjacent to Pad G4 (Figure 18). The object appears to be wider on the end nearest the launch pad. The overall length of the object is approximately [redacted]. The narrower portion measures approximately [redacted]. The wider portion measures about [redacted] long and is [redacted] wide. On [redacted] several days later, the gantry is in the center of Pad G4 [redacted].

Launch Site G5/G6 (12) has progressed to a late stage of construction (Figure 19). The launch site is secured and contains a loop road system and 2 rectangular pads. An earth-mounded structure is visible inboard of each pad. An earth-mounded probable control building can be identified midway between and to the rear of the pads. Gantry tracks lead from each pad and

converge to the rear of Pad G6, where a gantry is under construction. It appears that one gantry will service both pads. The launch site in the vicinity of the pads has a clean completed appearance on [redacted] (September 1964).

Launch Site G7 (18) is confirmed as a single silo in a midstage of construction (Figure 20). The launch site is double fenced. [redacted] (August 1964) a probable liner extends upward out of the silo core. A cylindrical object, probably a silo liner segment, is adjacent to the excavation. On [redacted] (September 1964) an L-shaped electronic facility, whose legs are approximately 1,250 feet in length, is apparently under construction within the secured area.

Launch Site G8/G9 (19), observed on excellent coverage of [redacted] (August 1964), is now assessed as a hard site which had progressed to a late stage of construction when last observed on [redacted] (September 1964). This site contains 2 silos 385 feet apart, and positioned beside straight segments of a loop road (Figure 21). The site is enclosed by a double security fence. The inside diameter of the silos is approximately 20 feet. [redacted] (August 1964) revealed a square structure below ground level near each silo, and connected to it by a conduit. Ditches are visible extending from the silo excavations to an excavation containing a probable control bunker. [redacted] (September 1964) showed that the silos and their associated buildings have been backfilled. A small earth mound is visible on the side of the loop road opposite each silo.

No change in facilities is apparent on coverage of Launch Complex H(8), associated with the SS-9, since our last revision. However, a missile was erected on Pad H2 on [redacted] in September 1964 (Figure 22). Tentative mensuration of the shadow cast by the missile indicates a length of approximately 105 feet.

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Launch Complex I(14), a single-silo site, was in a midstage of construction when last observed on [redacted] in September 1964 (Figure 23). The silo has been brought up to ground level but has not been backfilled. A building approximately 80 feet long has been constructed within the loop road. An L-shaped electronic device, with legs approximately 1,280 feet long, was first observed on [redacted] (August 1964). Mensuration of the silo excavation taken from this mission indicates an outside dimension approximately 50 by 50 feet, with a hole approximately 25 feet in diameter. A ground scar between Launch Complex I(14) and Launch Site A3(15), and a ditch between this complex and Launch Site B2(16)

The beginning of what may be a launch facility at Complex J was noted on [redacted] in September 1964. An irregular excavation and numerous vehicles are discernible in a scarred area approximately 3,000 feet northeast of the end of the road leading eastward from the support facility (Figure 24). Construction continues on the building east of the main rail spur.

Launch Complex K(13) is now confirmed as a hard launch facility containing 2 single silos in a midstage of construction. The silos are separated by a distance of 1,100 feet, and connected by ditching to a separately secured, L-shaped electronic facility and possible control area (Figure 25). The silos measure approximately 50 feet square, with circular openings about 30 feet in diameter. In most respects the silos are similar to those at Launch Complexes A, B, G (excluding G8/G9(19), and I(14).

COMMUNICATIONS FACILITIES AT DEPLOYED ICBM COMPLEXES

A communications site similar to those previously identified at the Yoshkar-Ola, Novosibirsk, Tyumen, and Verkhnyaya Salda ICBM Complexes was observed at the Svobodnyy Complex on [redacted] (August 1964). The site contains 5 fishbone receiving antennas under construction and at least one dipole (Figure 26).

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at Tyuratam, indicates that about 2 missiles are available for each SS-6 and SS-8 soft launcher, and 2 or somewhat less for those employing the SS-7. These figures are in addition to a single missile for each operational hard launcher.

These analyses indicate that the missiles available to the currently operational force

of 197 launchers (including 51 silos) for initial salvo, refire, and maintenance spares may range from a low of about 350 to a possible high of as many as 450. If the low side of this range is more accurate, then it would seem likely that some sites might have a multiple refire capability, while others have none.



FIGURE 3. ALEYSK ICBM COMPLEX.

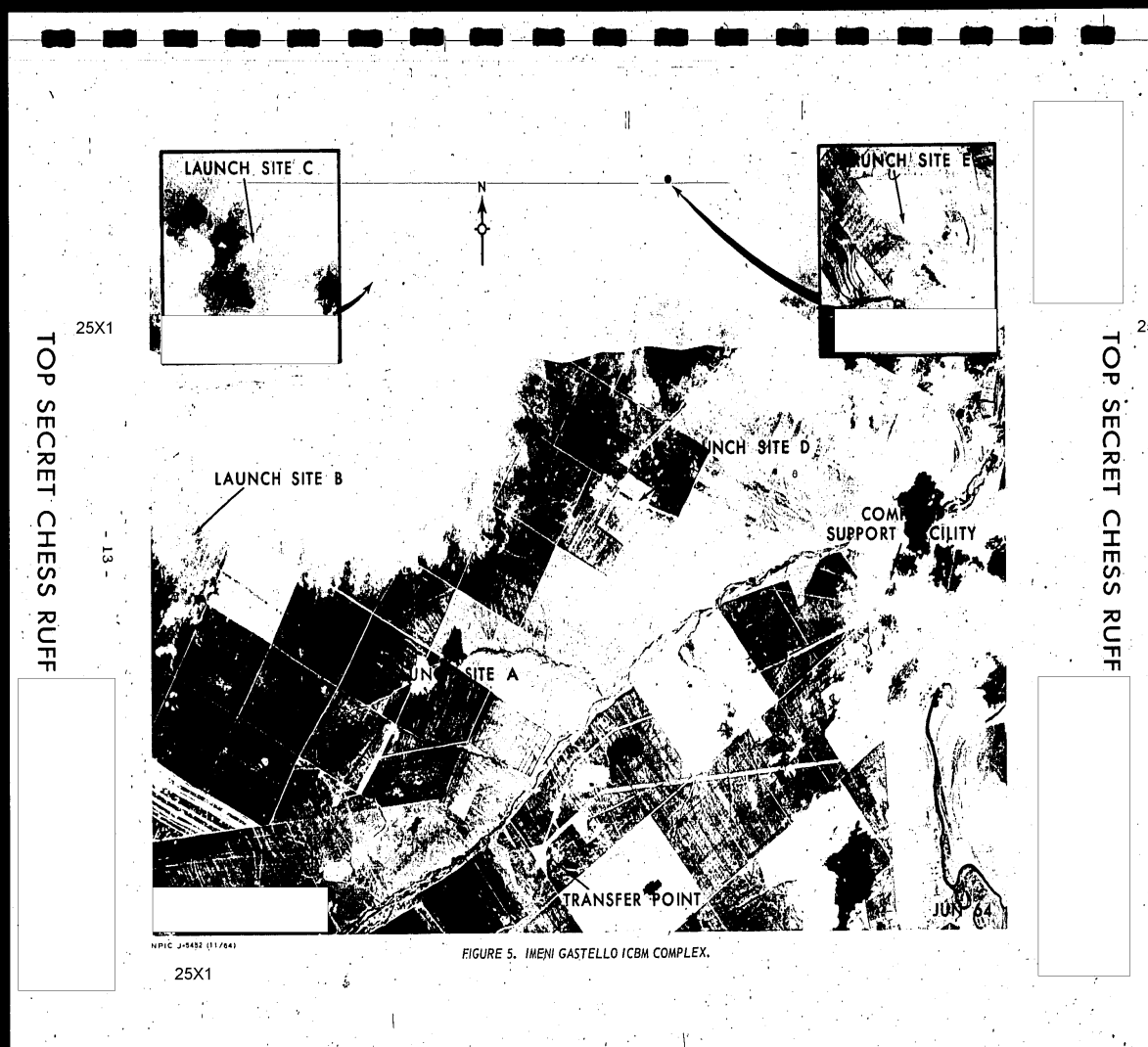
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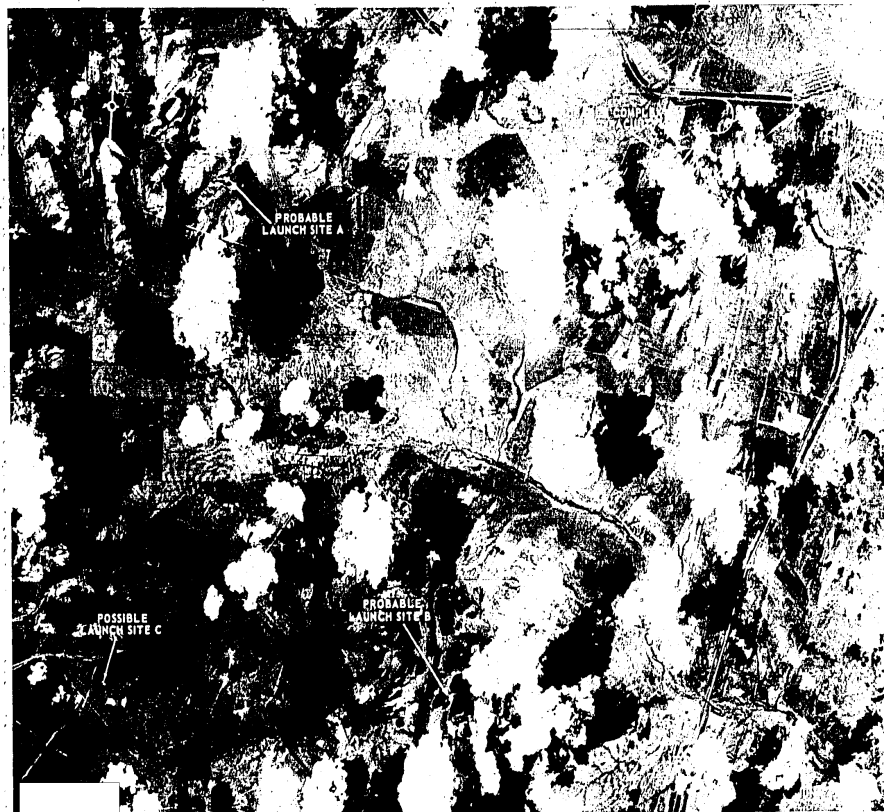


FIGURE 6. KARTALY ICBM COMPLEX.

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FIGURE 7, UZHUR ICBM COMPLEX.

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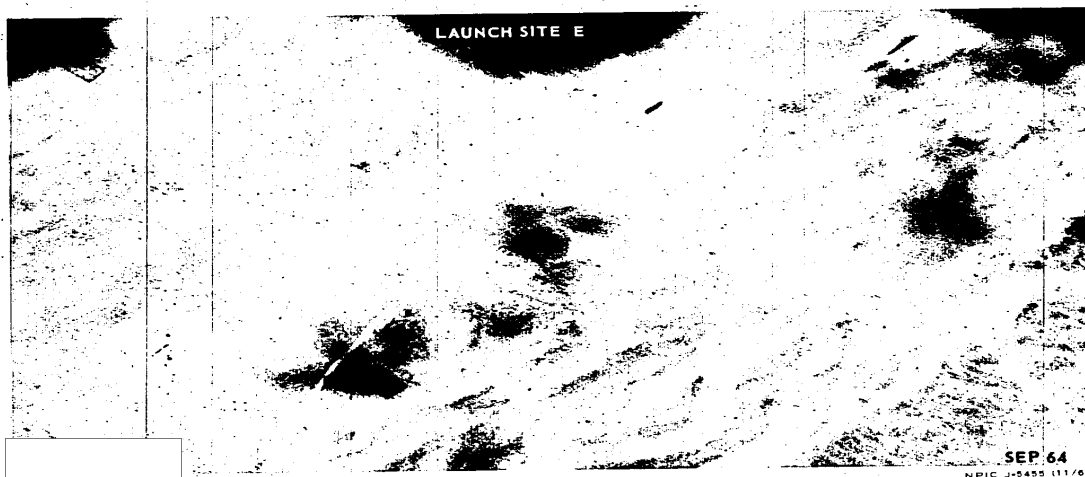


FIGURE 8. LAUNCH SITES C(3), D(4), AND E(5), ZHANGIZ-TOBE.

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FIGURE 9. COMPLEX SUPPORT FACILITY, ZHANGIZ-TOBE.

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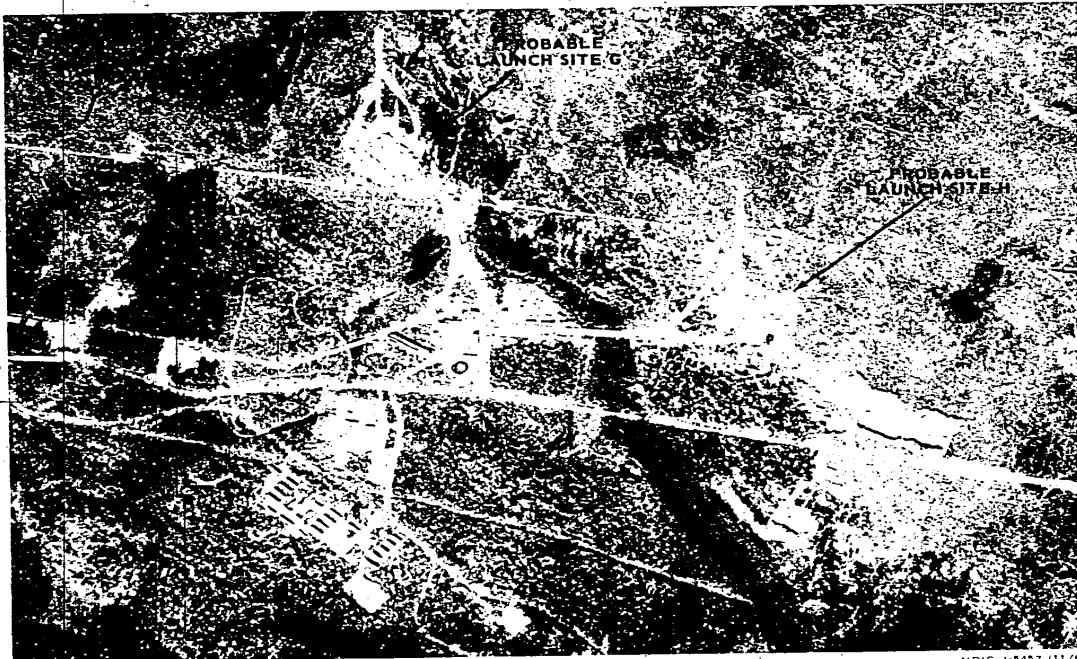


FIGURE 10. PROBABLE LAUNCH SITES G(9) AND H(10), PLESETSK.

NPIC J-5457 (11/64)



FIGURE 11. LAUNCH SITE F, PLESETSK.

NPIC J-5458 (11/64)

- 18 -

TOP SECRET CHESS RUFF

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TOP SECRET CHESS RUFF

25X1
25X1



FIGURE 12. LAUNCH SITE A3(15), TYURATAM.

- 19 -

TOP SECRET CHESS RUFF

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TOP SECRET CHESS RUFF



FIGURE 13. LAUNCH COMPLEX B, TYURATAM.

NPIC J-8460 (11/64)

- 20 -

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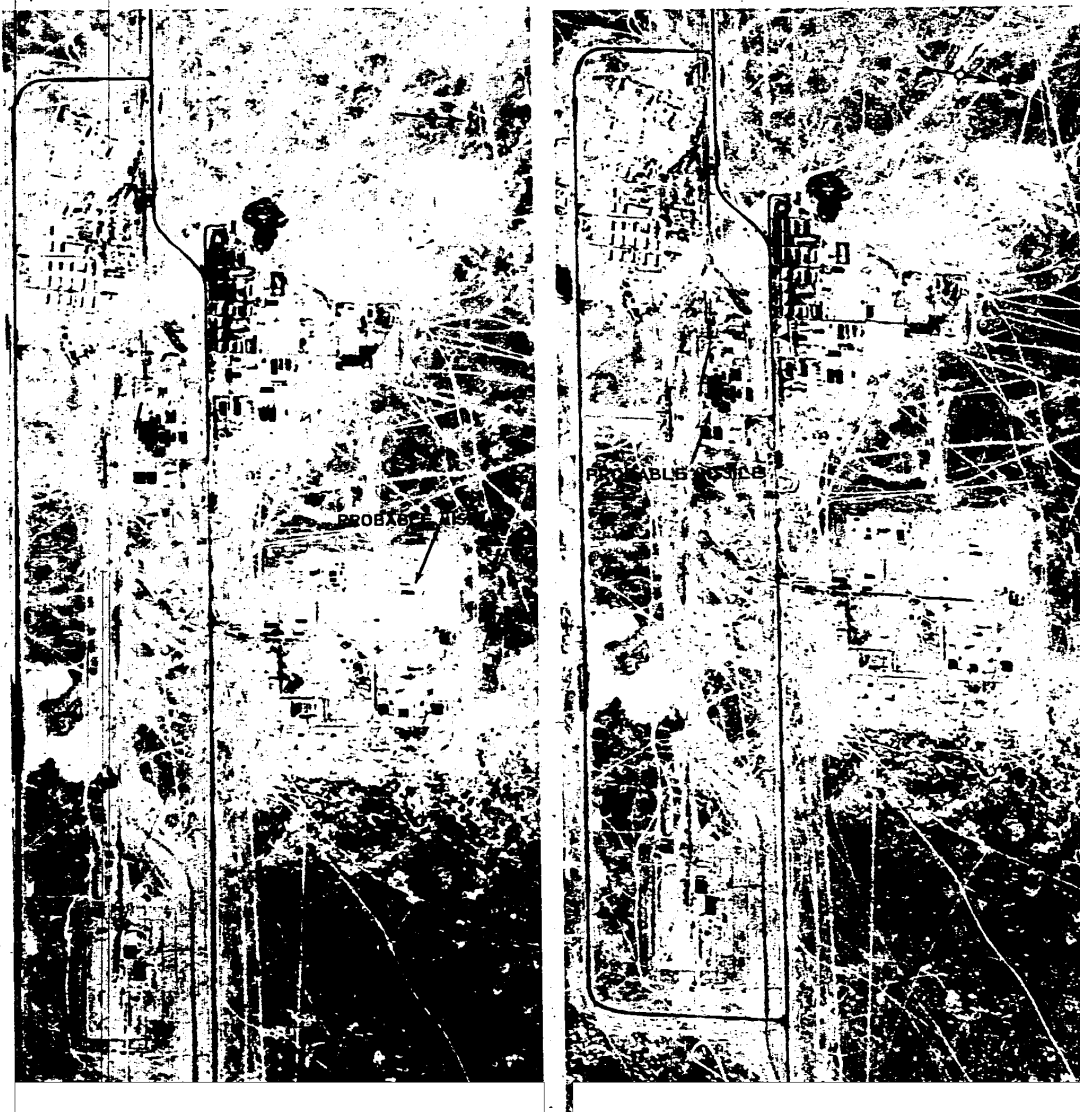


FIGURE 14. PROBABLE MISSILE AT LAUNCH COMPLEX C, TYURATAM.

NPIC J-5401 (11/66)

- 21 -

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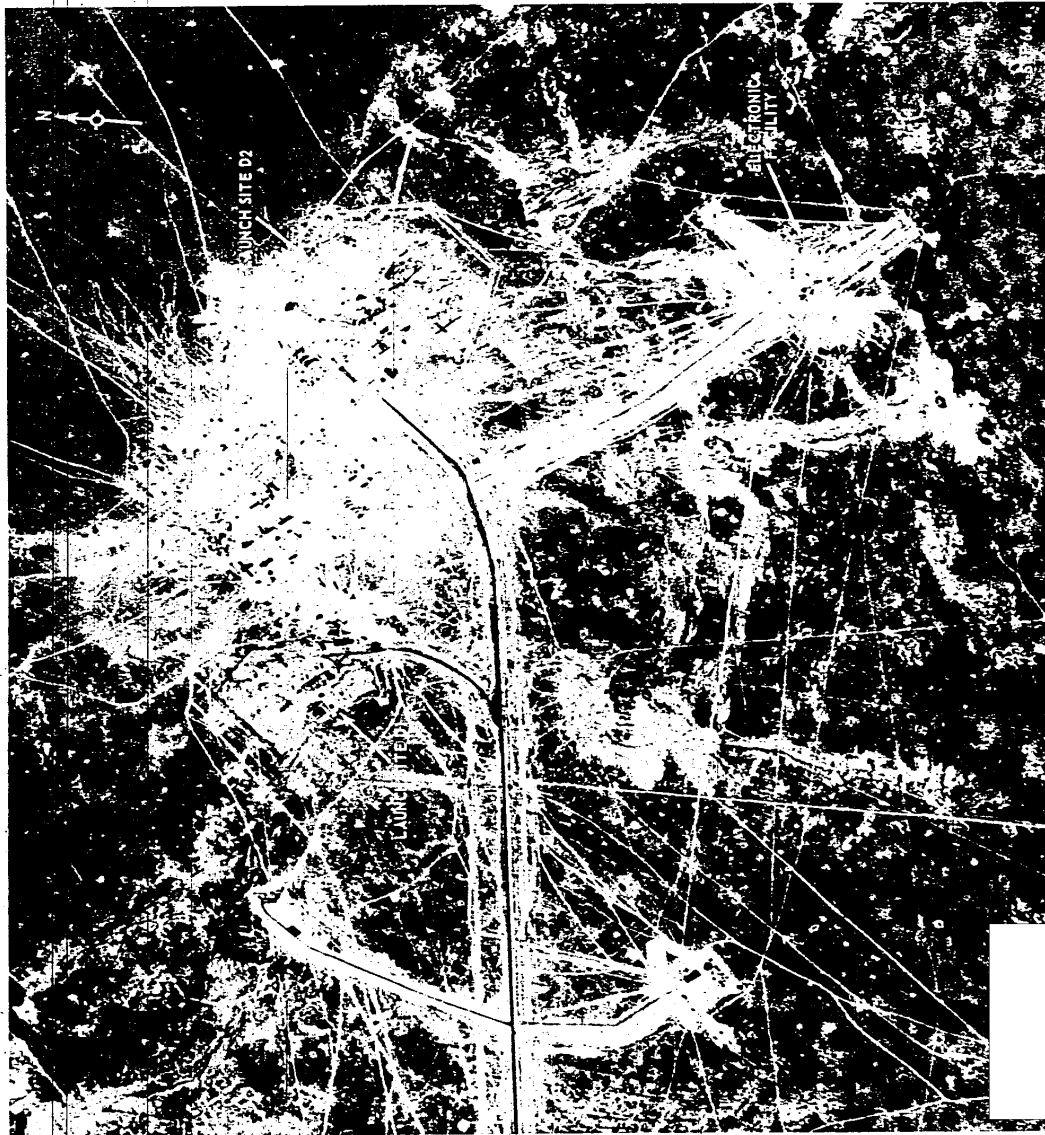


FIGURE 15. LAUNCH SITE D2(9), TYURATAM.

NPIC J-5402 (11/64)

- 22 -

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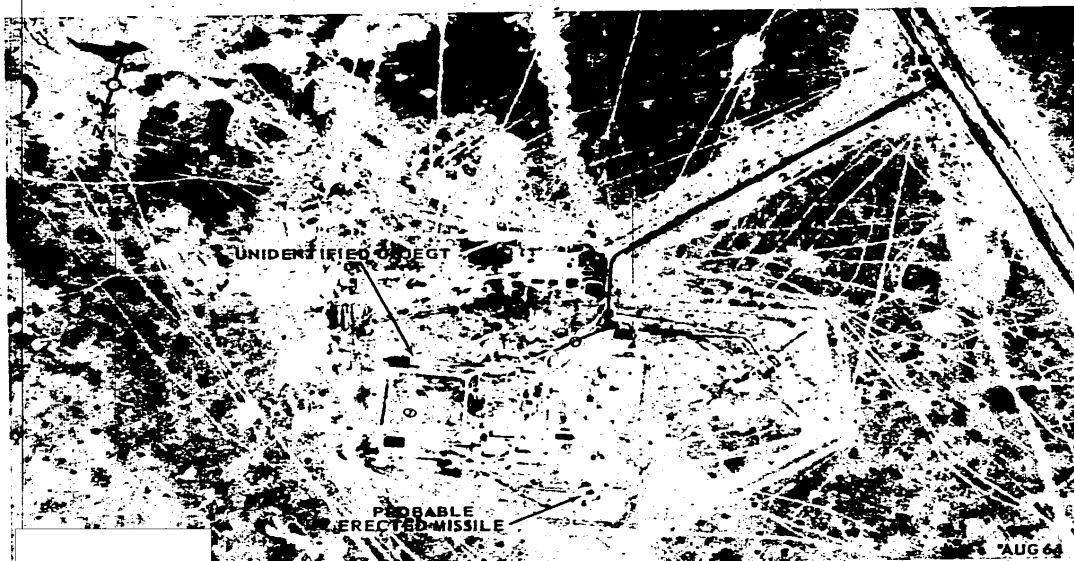
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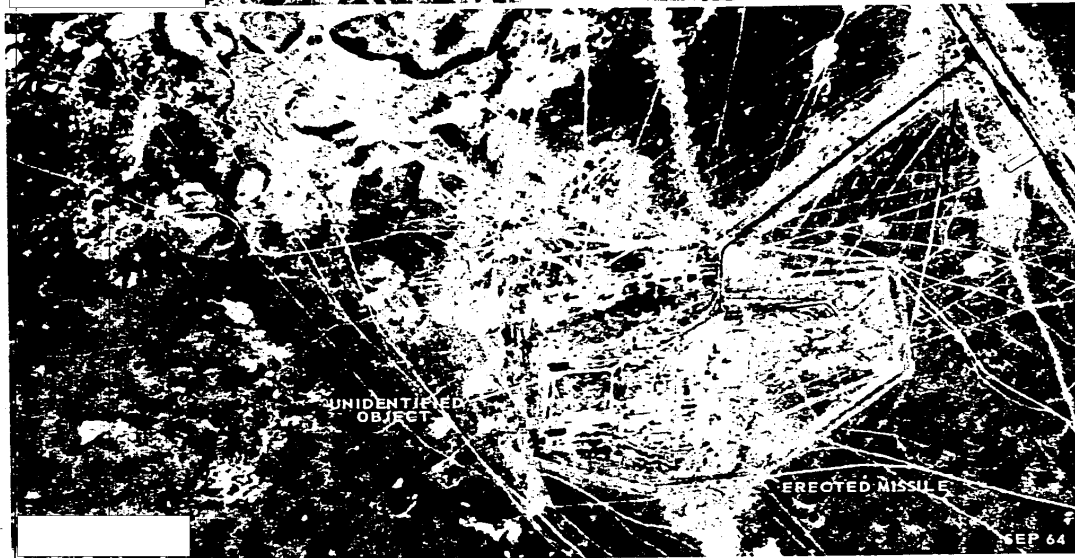
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25X1

FIGURE 16. LAUNCH COMPLEX E(6), TYURATAM.

NPIC J-5463 (11/64)

- 23 -

TOP SECRET CHESS RUFF

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TOP SECRET CHESS RUFF



FIGURE 17. LAUNCH SITE G1/G2(7), TYURATAM.

NPIC J-5464 (11/64)

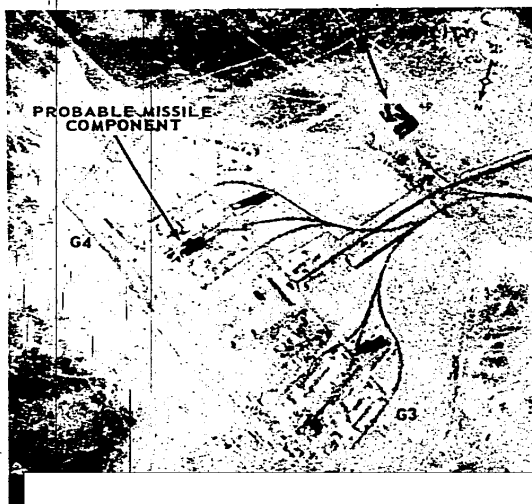


FIGURE 18. LAUNCH SITE G3/G4(11), TYURATAM.

NPIC J-5585 (11/64)

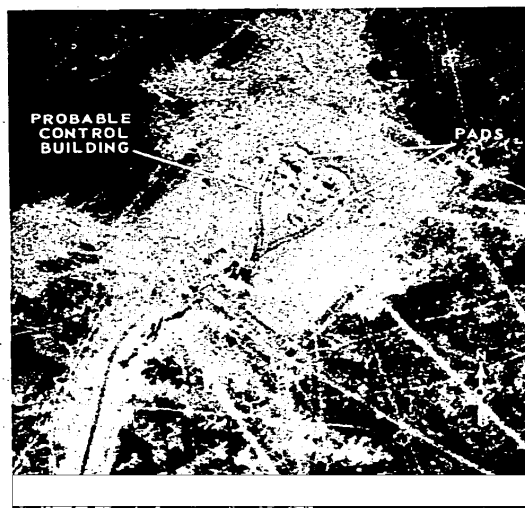


FIGURE 19. LAUNCH SITE G5/G6(12), TYURATAM.

NPIC J-5586 (11/64)

- 24 -

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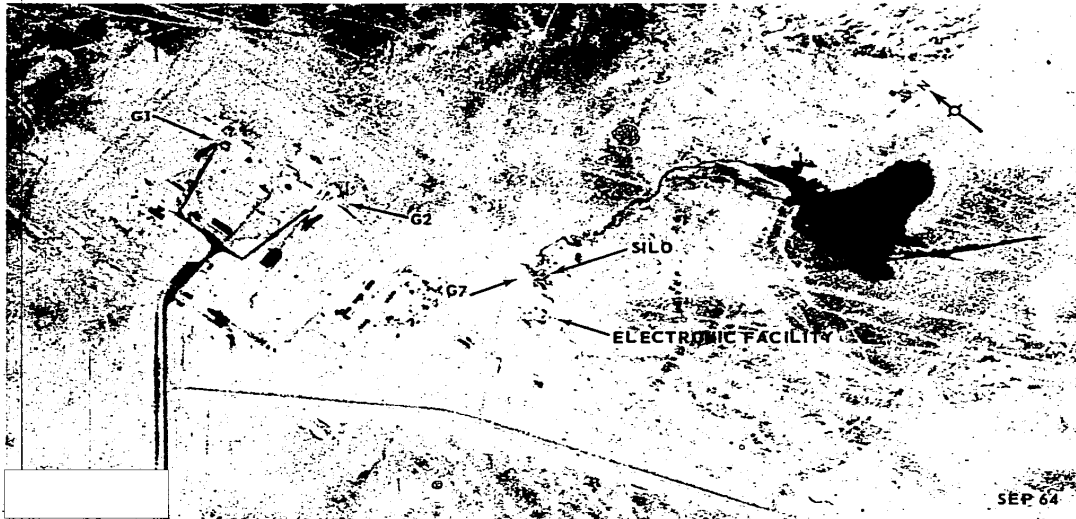
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FIGURE 20. LAUNCH SITE G7(18), TYURATAM.

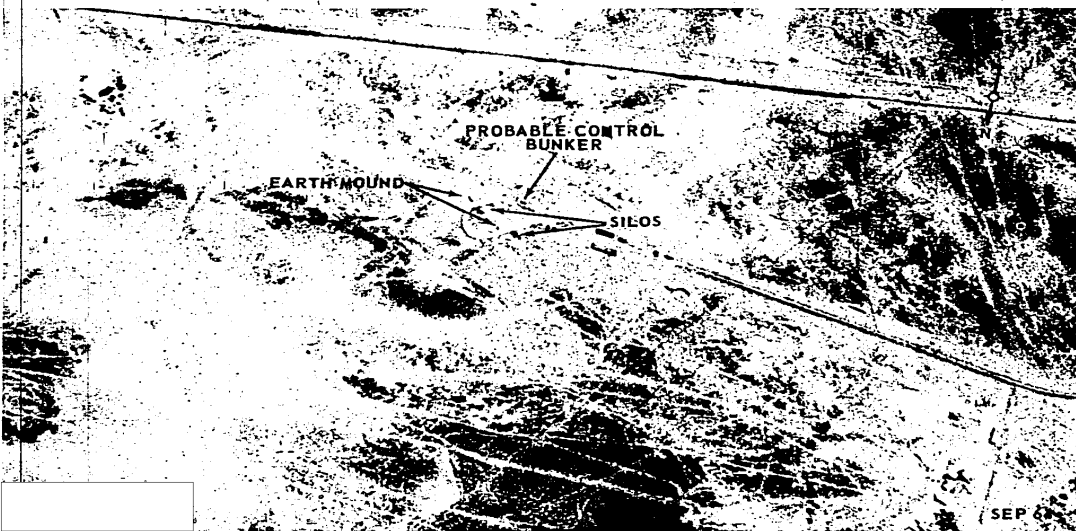


FIGURE 21. LAUNCH SITE G8/G9(19), TYURATAM.

- 25 -

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TOP SECRET CHESS RUFF

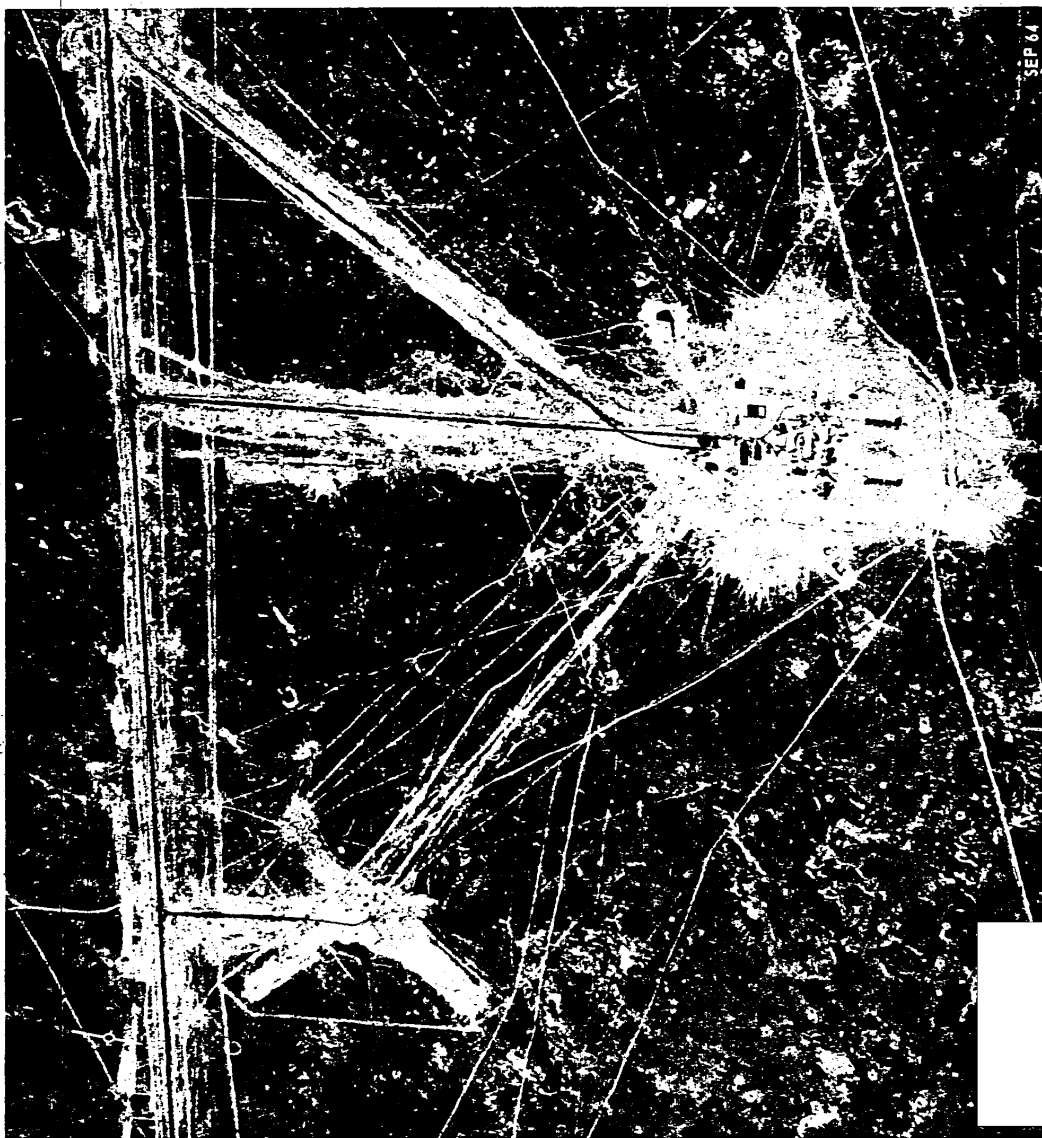


FIGURE 22. LAUNCH COMPLEX H(8), TYURATAM.

NPIC J-2589 (11/74)

- 26 -

TOP SECRET CHESS RUFF

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ZUA

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25X1

TOP SECRET CHESS RUFF



FIGURE 23: LAUNCH COMPLEX (14), TYURATAM.

NPIC J4590 11/1/64

- 27 -

TOP SECRET CHESS RUFF

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23A1

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25X1

TOP SECRET CHESS RUFF



FIGURE 24. COMPLEX J, TYURATAM.

- 28 -

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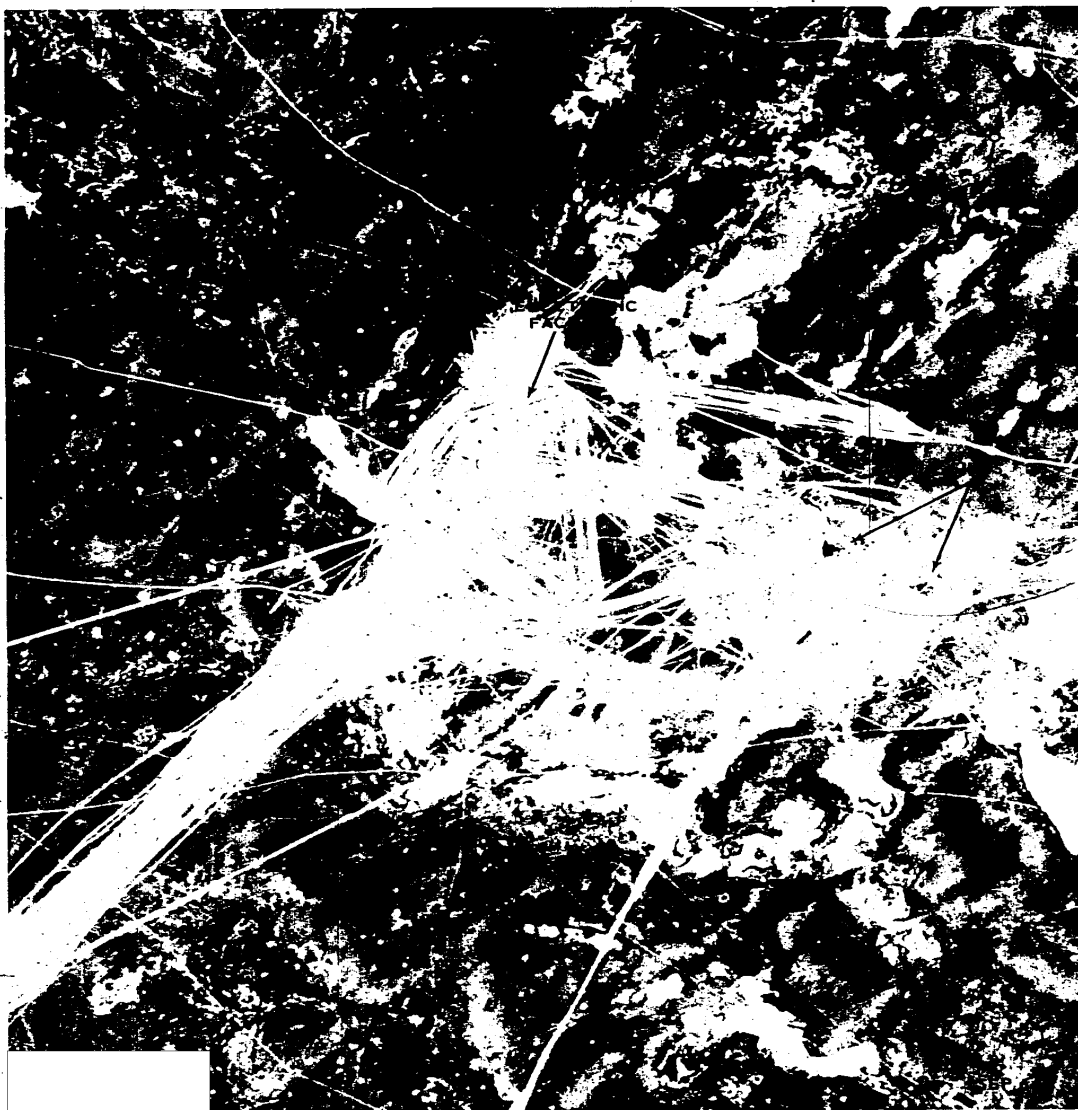
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FIGURE 25. LAUNCH COMPLEX K(13), TYURATAM.

NPIC J-5592 (11/64)

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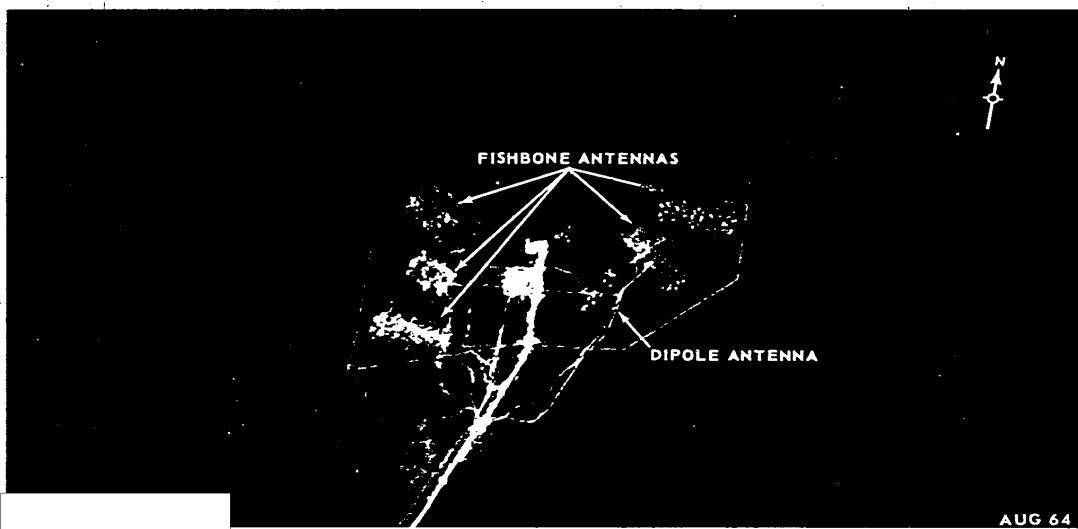


FIGURE 26. COMMUNICATIONS FACILITY, SVOBODNYI.

NPIC, J-5593 (11/64)

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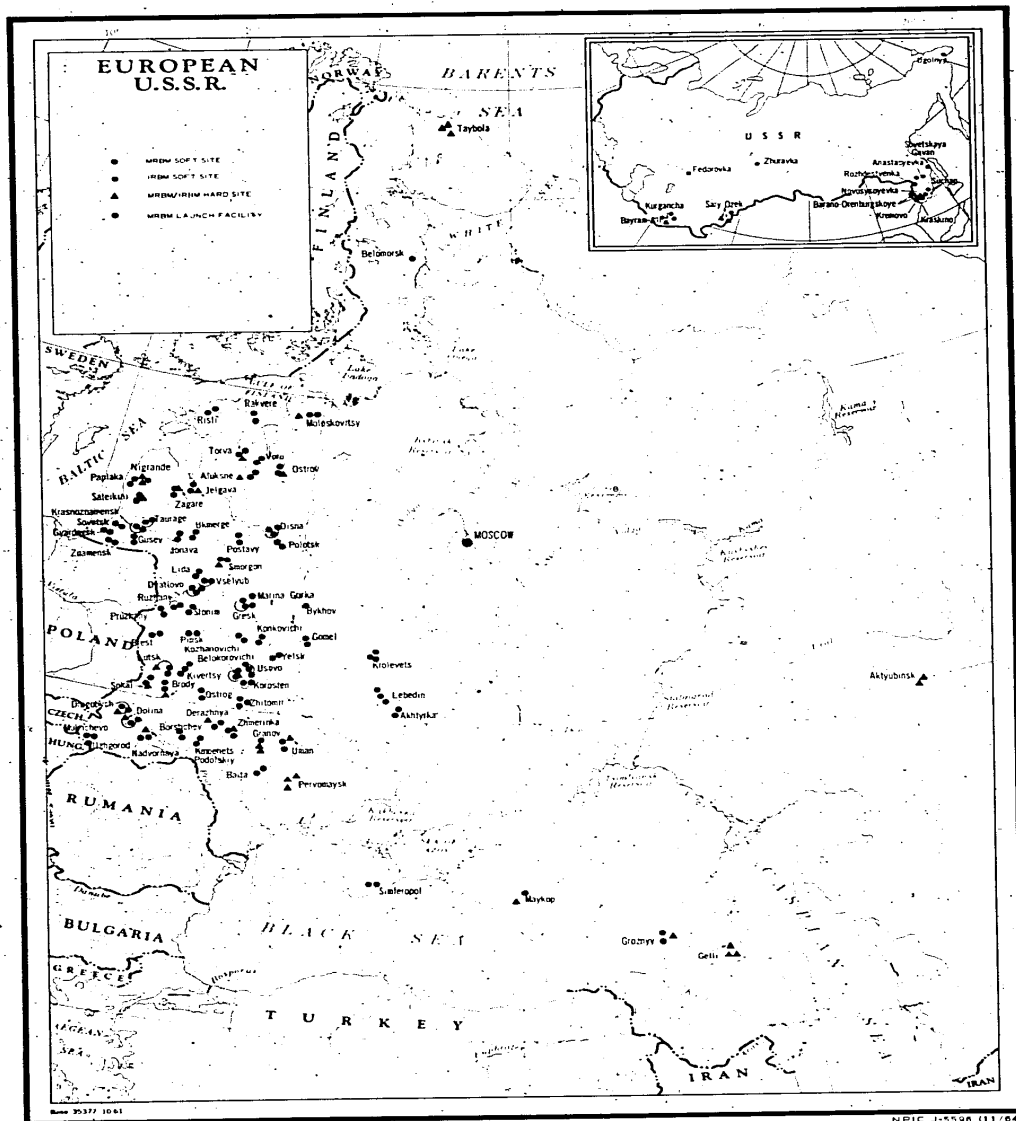
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FIGURE 29. DEPLOYMENT OF SOVIET IRBM/MRBM COMPLEXES.

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SOVIET IRBM/MRBM DEPLOYMENT

KEYHOLE photography since our 14th Revision covers 12 of the 15 IRBM, and 54 of the 69 MRBM complexes. No new sites have been identified; one IRBM hard site has been abandoned, and we are dropping it from the inventory. See Figure 29 for locations of deployed IRBM/MRBM complexes. Typical configurations of the launch sites are shown in Figure 30. The composition of IRBM/MRBM complexes is given in Table 6.

IRBM DEPLOYMENT

The Soviet IRBM force currently consists of 36 sites containing a total of 124 launchers, including 60 in a hard configuration. Of these launchers, 115, including 51 hard, are operational. Since our 14th Revision 3 IRBM hard sites have been completed, leaving only 3 remaining under construction. Newly operational sites (Figure 31) are Kalnik (Granov Complex), Petrovskiy (Aktyubinsk Complex), and Novosysoyevka 2 (Novosysoyevka Complex). The Kalnik site was observed on [redacted] October 1964; the other 2 on [redacted] September 1964. Continued coverage of the Bolshaya Kaménka site at the Saratov Complex (see 14th Revision) reveals no activity or change in construction status, leading us to conclude that this site has been abandoned.

MRBM DEPLOYMENT

The Soviet MRBM force currently consists of 158 sites containing 632 launchers, including 84 in a hard configuration. All are operational. The last 2 sites to reach operational status, Redkino (Ostrov Complex) and Postavy 2 (Postavy Complex), were complete when observed on [redacted] (August 1964) [redacted] (September 1964), respectively (Figure 32).

KAPUSTIN YAR MISSILE TEST CENTER

Test Range Facilities

[redacted] (September 1964) provided significant coverage of the Kapustin Yar Missile Test Center.

At Launch Complex A (Figure 33), the launch facilities show no apparent change since [redacted] (April 1964); however, a probable missile exercise is underway on the southern pad. The missile appears to be erected and some vehicles are observed on the western edge of the pad. Poor image quality precludes identification of the missile and associated equipment. In the housing and support area, the large multistory building that was under construction on [redacted] (April 1964) has been completed, and the foundation and part of the walk of another structure have been erected.

At Launch Area 1C (Figure 34), the 2 new pads are still under construction. The pads are approximately 90 feet square and a rail spur appears to terminate at the center of each. A new fence line has been constructed to include the new pads. The rail-served launcher has been removed from the old launch pad.

At Launch Site 4C1, the prototype for deployed MRBM hard sites, significant new construction was observed (Figure 35). This activity is new since [redacted] (April 1964). A new rail line, branching off the line serving Launch Area 1C, has been extended into the launch site. The railroad terminates in a fork just east of the western rear silo. A new square excavation, located approximately 200 feet south of the western rear silo, contains a row of 4 linear objects and a circular hole or revetment. A large structure is observed between the excavation and the site access road. The tall structure formerly positioned over the eastern forward silo has been moved north to the silo

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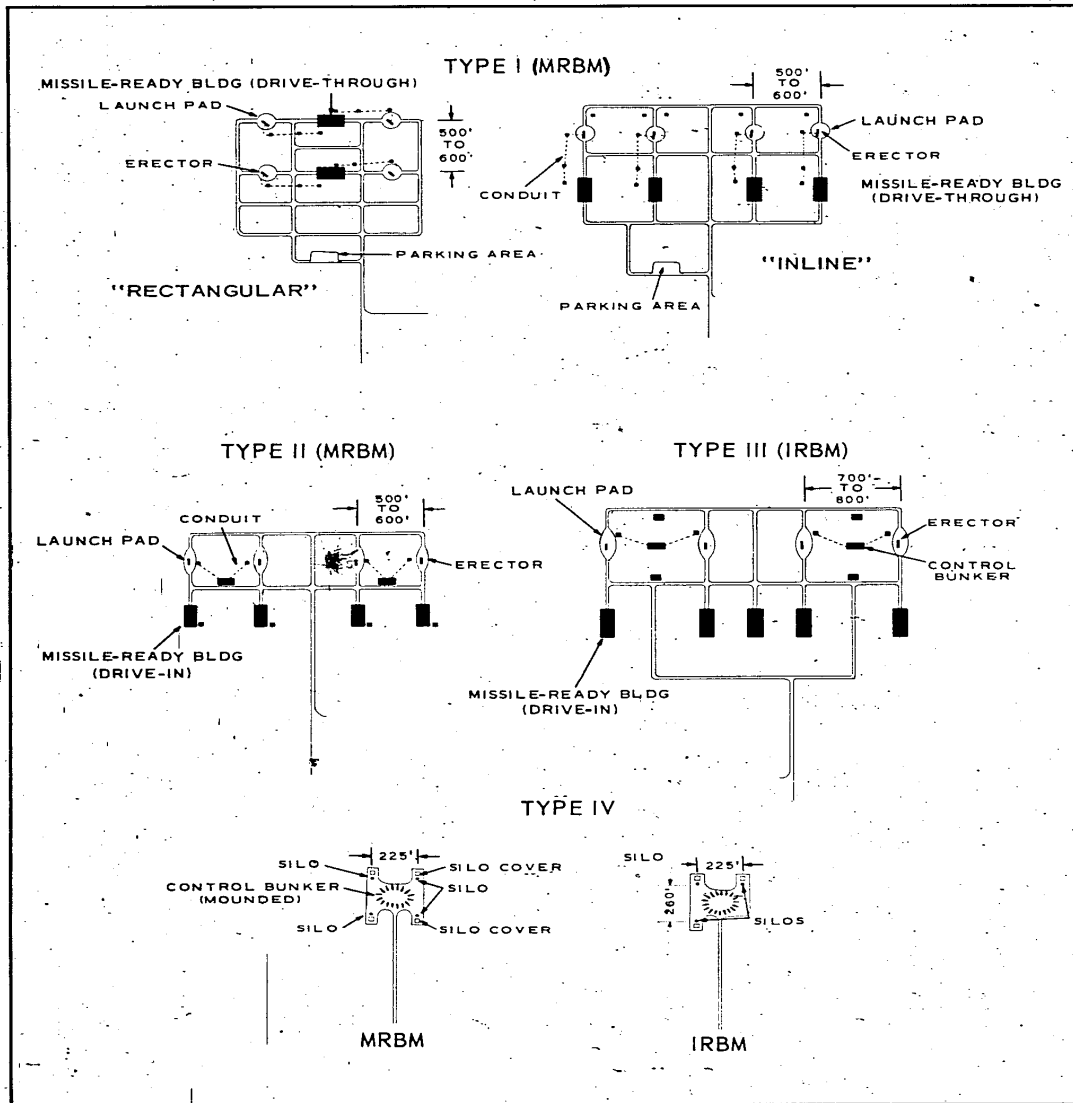


FIGURE 30. TYPICAL CONFIGURATIONS OF IRBM/MRBM LAUNCH SITES.

NPIC J-5597 (11/64)

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cover. A crane is discernible near the eastern rear silo. The sum of this activity suggests major modification to this launch site.

The rail-served probable missile assembly and checkout area located approximately 5.5 nautical miles northwest of Launch Complex C shows new activity (Figure 36). The western security fences have been extended since June 1964. [] to include approximately 40 per cent more area. In the southwest section of this area there are 3 possible 175- by 55-foot drive-through buildings under construction. Approximately 1,500 feet north is another new building, measuring approximately 110 by 50 feet, which will probably be rail served. In the southern portion of the original area, a rail-served building measuring approximately 90 by 35 feet has been constructed since June 1964.

At Launch Complex E (Figure 37), new ground scarring is evident north of the pad and parallel to the southern loop access road since June 1964. [] A new area of construction activity (Figure 38), approximately 2.5 nm north northeast of the complex, is reached by a continuation of the road serving Launch Complex E. There was no evidence of this new area or the service road on [] (June 1964). The new area is rectangular and measures approximately 735 by 620 feet. It is secured by a single fence and has 2 security buildings at the entrance. The fence is broken near the northern corner for access to a borrow pit. A raised structure approximately 35 feet square, near the center of the area, is surrounded by a loop road. A circular revetment is adjacent to the western side, and a linear revetment the eastern side, of the loop road. A bivouac/training area (Figure 39), new since June 1964 [] is visible approximately 2 nm west of Launch Complex E. This area consists of 2 rectangular sections containing respectively,

a tent area and a motor pool.

Test Range Activity

Firing activity at Kapustin Yar during the

[] showed a decrease in comparison with that reported in our last revision for the []

SS-4 operations were conducted to the 1,020-nm impact area []

Most, if not all 5, were probably operational/training type firings. All apparently were successful. One SS-5 firing to the 2,200-nm impact area was noted []

In addition, flight testing of a probable new tactical missile system(s) continued, although at a reduced rate.

FIXED FIELD SITES

Since our last revision 16 additional fixed field sites have been identified on KEYHOLE photography, bringing the total to 66 (Table 5). The newly identified sites have from 2 to 4 padlike clearings; distances from the nearest IRBM/MRBM complex vary from less than one to approximately 25 nm. This apparently is within the pattern previously observed.

These sites appear to fall into 2 general groups: those that were constructed prior to mid-1963 (about 25 percent of the total); and the larger majority which have been built since that time, indicating an acceleration of the pace of this program.

The purpose of these sites is still unclear. Field training for crews at first appeared to be a logical function, but the large number of sites appears to weaken this argument. We still believe that all sites probably do not serve the same purpose. Although some in the early group may actually represent the alternate/reserve positions referred to in IRONBARK

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documents, others, because of their location near permanent sites, would make poor alternatives. Some of these older sites may represent early deployment of the SS-3 system. Another possibility we have examined is that the refire missiles available for soft MRBM launchers could be moved to the fixed field sites and fired in the initial salvo with missiles from the permanent sites. Our analysis, however, tends to eliminate this possibility, primarily because it would require an additional inventory of launch equipment at each soft site, and there is no evidence to support this. In fact, in 5 instances where field sites have been occupied, no erectors or other ground support equipment could be observed at the associated permanent site.

We continue to believe, however, that MRBM units are currently capable of moving to, and firing from, these fixed field positions.



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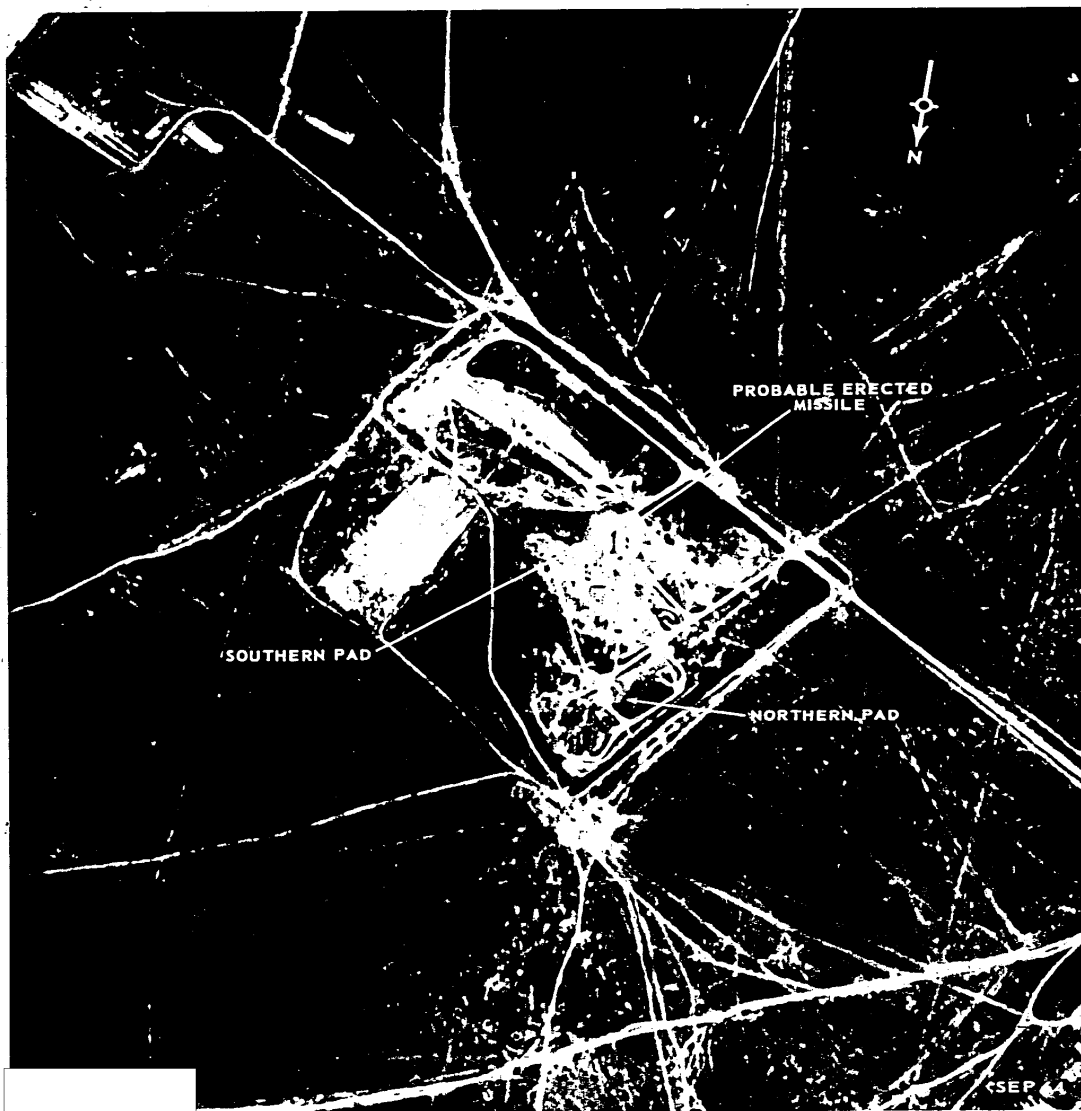


FIGURE 33. LAUNCH COMPLEX A, KAPUSTIN YAR.

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FIGURE 34. LAUNCH AREA 1C, KAPUSTIN YAR.

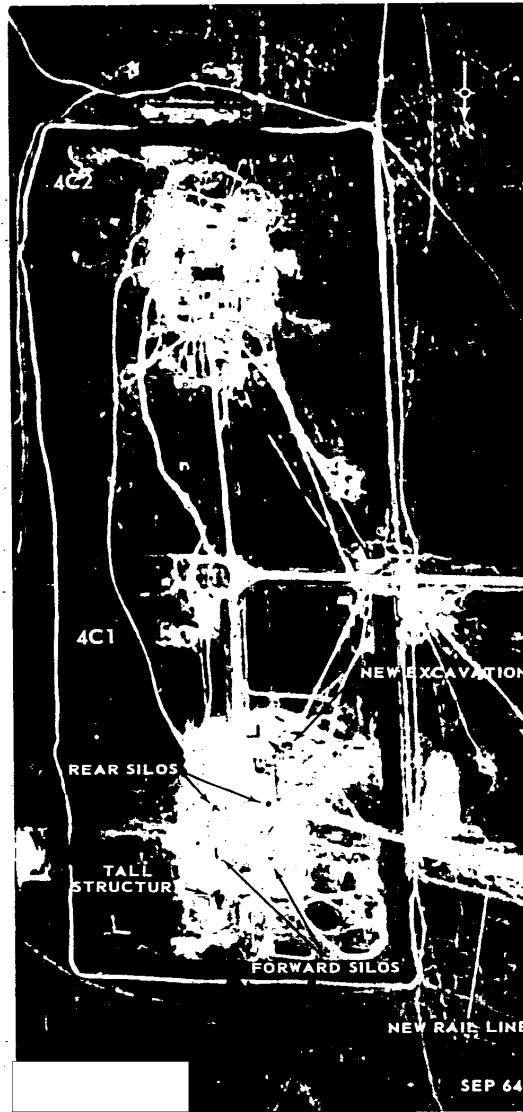


FIGURE 35. LAUNCH SITE 4C1, KAPUSTIN YAR.

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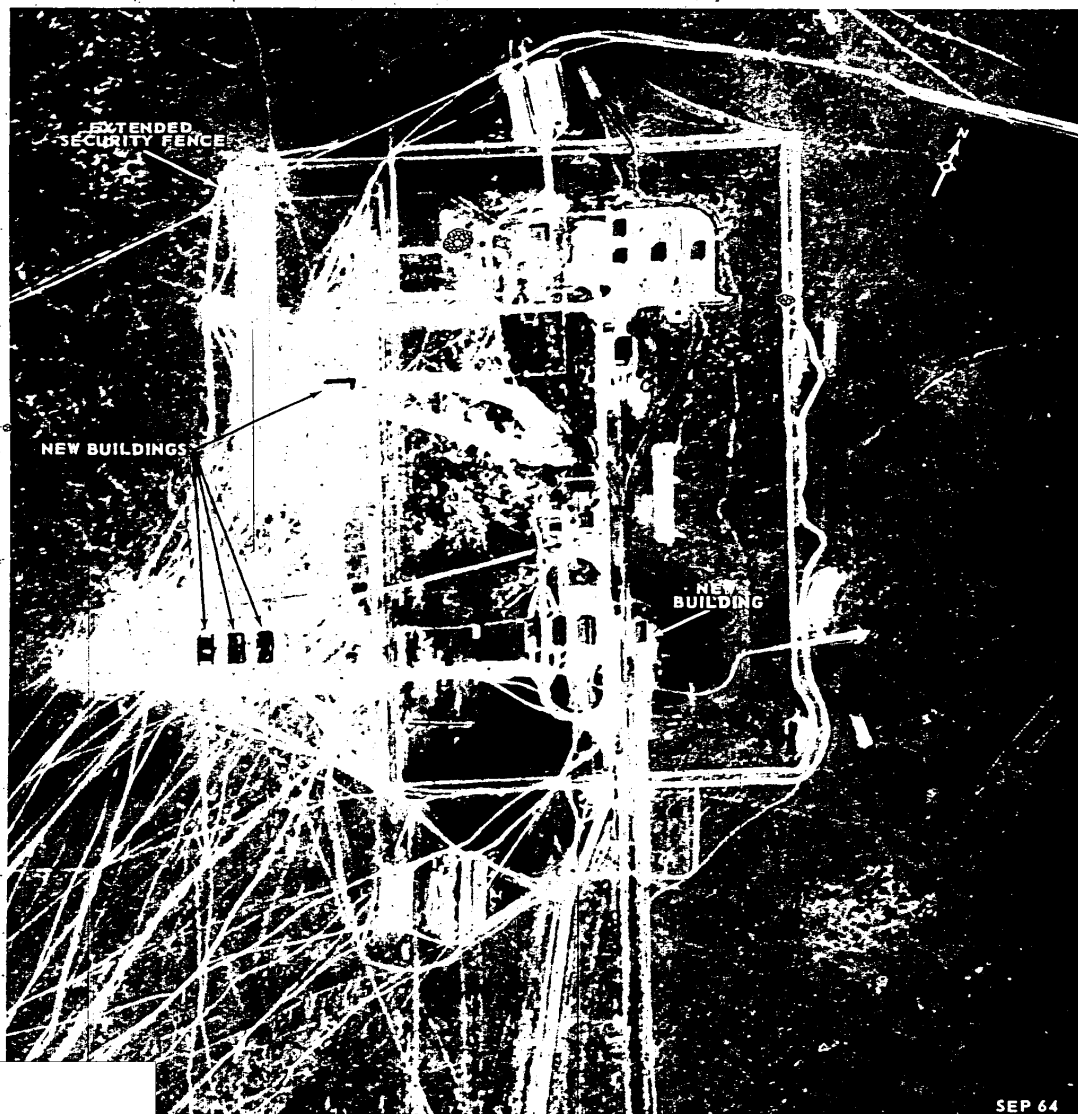


FIGURE 36. PROBABLE MISSILE ASSEMBLY AND CHECKOUT AREA NORTHWEST OF LAUNCH COMPLEX C, KAPUSTIN YAR.

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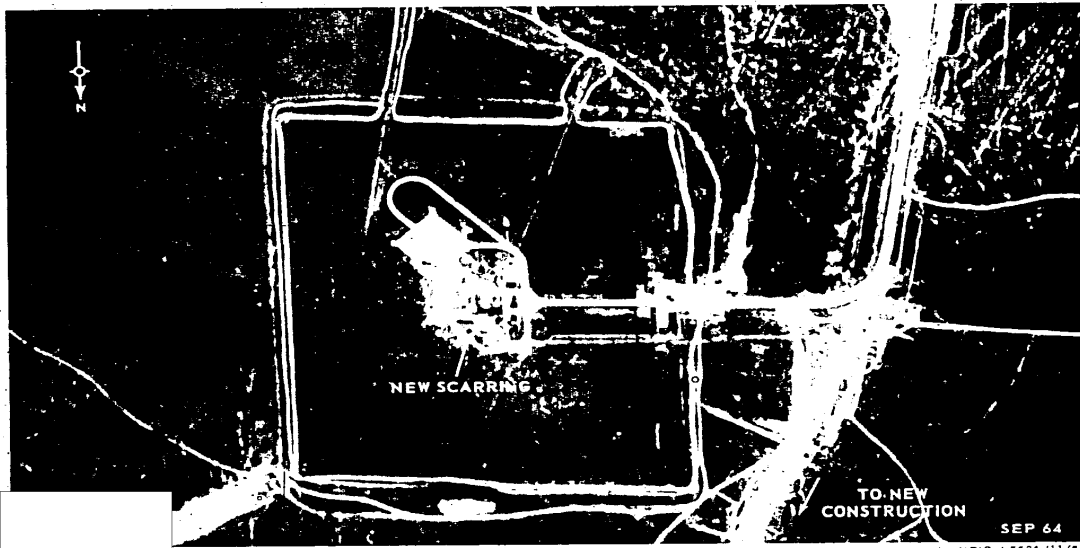


FIGURE 37. LAUNCH COMPLEX E, KAPUSTIN YAR.

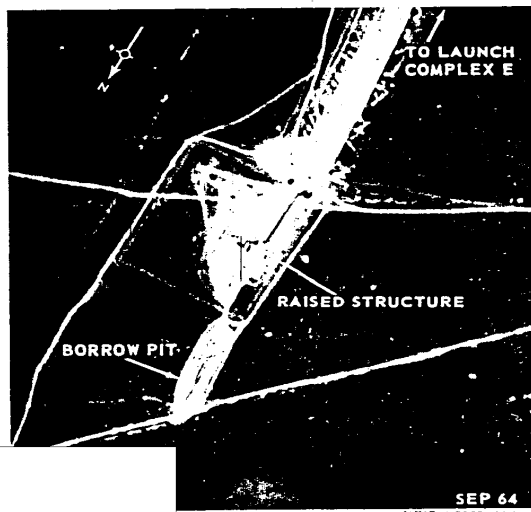


FIGURE 38. NEW CONSTRUCTION NORTH OF LAUNCH COMPLEX E, KAPUSTIN YAR.

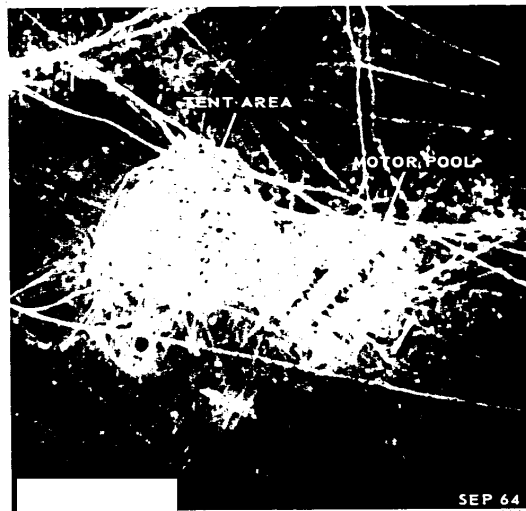


FIGURE 39. NEW BIVOUAC/TRAINING AREA WEST OF LAUNCH COMPLEX E, KAPUSTIN YAR.

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TABLE 1. SUMMARY OF ESTIMATED STATUS OF IDENTIFIED ICBM, IRBM, AND MRBM LAUNCHERS AT DEPLOYED COMPLEXES*

Type	Sites	Launchers	Operational	U/C	Type	Sites	Launchers	Operational	U/C
ICBM					IRBM				
IA	3	4	4	0	III	16	64	64	0
IB	2	4	0	4	IV	20	60	51	9
IIA	5	10	10	0	TOTAL	36	124	115	9
IIB	29	58	58	0	MRBM				
IIC	7	14	14	0	I	54	336	336	0
IID	30	60	60	0	II	53	212	212	0
IIIA	25	75	42	33	IV	21	84	84	0
IIIB	3	9	9	0	TOTAL	158	632	632	0
III (Single)	30	35	0	35	GRAND TOTAL				
TOTAL	134	269	197	72		194	756	747	9

*See Tables 2, 3, and 4 for details. Figures include 3 launch silos at Type III ICBM and Type IV IRBM sites, and 4 launch silos at Type IV MRBM sites.

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TABLE 2. SUMMARY EVALUATION OF SOVIET ICBM DEPLOYMENT

Location*	ICB Number	Coordinates	Type of Site	Number of Launchers		Site Verified		First Forfeiture		Latest Coverage		Stage of Construction Last Feasible Forfeiture		Estimated Quarter Site Operational				Estimated Status
				Sub	Host	Date	Mo	Date	Mo	Date	Mo	Date	Mo	1st	2nd	3rd	4th	
ALEX-SK	Site A(1)	52-27N 82-53E	III (Single)	1										65				F C
	Site B(2)	52-28N 82-50E	III (Single)	1										65				F C
	Site C(3)	52-33N 82-42E	III (Single)	1										65				F C
	Site D(1)	52-32N 82-54E	III (Single)	1										65				F C
	Site E(2)	52-35N 82-50E	III (Single)	1										65				F C
	Site F(6)	52-36N 82-50E	III (Single)	1										65				F C
DONBAROVSKIY	Site A(1)	51-11N 50-47E	III (Single)	1										65				F C
	Site B(3)	51-06N 50-54E	III (Single)	1										65				F C
	Site C(2)	51-01N 50-41E	III (Single)	1										65				F C
	Site D(1)	50-55N 50-53E	III (Single)	1										65				F C
	Site E(6) Probable	51-04N 50-24E	III (Single)	1										65				F C
DUBAY VVA	Site A(1)	51-25N 113-00E	III	2										63				Operational
	Site B(2)	51-25N 113-04E	III	3										63				Operational
	Site C(1)	51-28N 113-04E	III	2										64				Operational
	Site D(5)	51-28N 113-04E	III	2										65				Operational
	Site E(5)	51-23N 112-50E	III	2										65				Operational
	Site F(6)	51-20N 112-55E	III	1										65				Operational
GABRAY V	Site A(1)	56-20N 92-18E	III	2										64				Operational
	Site B(2)	56-20N 92-27E	III	2										65				Operational
	Site D(1)	56-20N 92-13E	III	1										65				Operational
	Site E(6)	56-28N 92-11E	III	1										65				Operational
INENT (ASTELLO)	Site A(1)	51-01N 66-00E	III (Single)	1										65				F C
	Site B(2)	51-06N 66-02E	III (Single)	1										65				F C
	Site C(3)	51-10N 66-00E	III (Single)	1										65				F C
	Site D(1)	51-07N 66-13E	III (Single)	1										65				F C
	Site E(5)	51-13N 66-13E	III (Single)	1										65				F C
D VIK	Site A(1)	56-50N 82-32E	III	2										63				Operational
	Site B(2)	56-40N 82-30E	III	2										63				Operational
	Site C(1)	56-34N 82-30E	III	2										63				Operational
KARTALY	Site A(1) Probable	53-01N 60-20E	III (Single)	1										65				F C
	Site B(2) Probable	52-56N 60-31E	III (Single)	1										65				F C
	Site C Possible		III (Single)	1														
KOSTROVA	Site A(1)	58-02N 11-23E	III	2										62				Operational
	Site B(2)	58-02N 11-07E	III	2										62				Operational
	Site C(3)	57-29N 11-09E	III	2										63				Operational
	Site D(1)	58-02N 11-10E	III	2										63				Operational
	Site E(5)	57-58N 11-13E	III	3										63				Operational
	Site F(6)	57-52N 11-10E	III	2										63				Operational
	Site G(7)	58-00N 11-42E	III	2										64				Operational
KOZEL-SK	Site A(1)	53-54N 35-43E	III	2										63				Operational
	Site B(2)	53-54N 35-47E	III	2										63				Operational
	Site D(1)	53-54N 35-51E	III	2										63				Operational
	Site E(5)	53-54N 35-41E	III	3										64				Operational
	Site F(6)	53-41N 35-39E	III	3										64				Operational

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TABLE 2. (Continued)

Location*	RE Number	Coordinates	Type of Site	Number of Launchers		Site Negotiated		First Coverage		Latest Coverage		Stage of Const on Last Feasible Coverage				Estimated Quarter Site Operational				Estimated Status	
				Soft	Hard	Date	Mon	Date	Mon	Date	Mon	Date	Mon	Const		1st	2nd	3rd	4th		
VIETNAM																					
Site A (1)		33-19N 83-10E	IB	2												61					Operational
Site B (1)		33-19N 83-02E	IB	3													61				Operational
Site C (1)		33-25N 82-51E	IB	3														61			Operational
Site D (1)		33-25N 83-11E	IB	2																	Operational
Site E (1)		33-20N 82-56E	IB	2																	Operational
VIETNAM																					
Site A (1)		36-31N 115-18E	IB	3												61					Operational
Site B (1)		36-35N 115-15E	IB	3																	Operational
Site C (1)		36-01N 115-05E	IB	3												62					Operational
Group D (1-10)		32-31N 116-06E	IB (single)	6																	Operational
VIETNAM																					
Site A (1)		33-09N 73-08E	IB	3												61					Operational
VIETNAM																					
Site A (1)		37-41N 36-11E	IB	2																	Operational
Site B (1)		37-41N 35-53E	IB	2																	Operational
Site C (1)		37-48N 36-07E	IB	2																	Operational
Site D (1)		37-42N 35-47E	IB	2																	Operational
Site E (1)		37-42N 36-00E	IB	2																	Operational
Site F (1)		37-41N 36-01E	IB	3												61					Operational
VIETNAM																					
Site A (1)		62-56N 10-27E	IA	2												60					Operational
Site B (1)		62-56N 10-52E	IA	1												60					Operational
Site C (1)		62-58N 10-41E	IA	1																	Operational
Site D (1)		62-58N 10-47E	IB	2																	Operational
Site E (1)		63-03N 10-57E	IB	2																	Operational
Site F (1)		63-01N 10-53E	IB	3												62					Operational
Site G (1)		62-51N 10-47E	IB	2																	Operational
Site H (1)		62-51N 10-43E	IB	2																	Operational
Site I (1)		62-55N 10-51E	IB	2																	Operational
Site J (1)		62-55N 10-52E	IB	2																	Operational
VIETNAM																					
Site A (1)		36-08N 63-51E	IB	3																	Operational
Site B (1)		36-10N 61-02E	IB	3												61					Operational
Site C (1)		36-07N 63-07E	IB	3																	Operational
VIETNAM																					
Site A (1)		31-53N 128-10E	IB	2																	Operational
Site B (1)		31-49N 128-19E	IB	2																	Operational
Site C (1)		31-53N 128-25E	IB	2																	Operational
Site D (1)		31-58N 128-02E	IB	2												61					Operational
Site E (1)		31-43N 128-00E	IB	2																	Operational
Site F (1)		31-52N 128-13E	IB	2																	Operational
Site G (1)		31-58N 127-50E	IB	3																	Operational
Site H (1)		32-03N 128-00E	IB	2												61					Operational
VIETNAM																					
Site A (1)		36-55N 10-27E	IB	2																	Operational
Site B (1)		36-56N 10-33E	IB	2																	Operational
Site C (1)		36-55N 10-17E	IB	2												62					Operational
Site D (1)		36-50N 10-40E	IB	2																	Operational
Site E (1)		36-49N 10-10E	IB	2																	Operational
Site F (1)		36-55N 10-22E	IB	2												61					Operational
VIETNAM																					
Site A (1)		36-52N 63-31E	IB	2																	Operational
Site B (1)		36-51N 63-27E	IB	2																	Operational

TOP SECRET CHESS RUFF

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TABLE 2. (Continued)

Location*	RF Number	Coordinates	Type of Site	Number of Launchers		Site Negated		First Coverage		Latest Coverage		Stages of Contact on Last Public Coverage			Estimated Quarter Site Operational				Estimated Status	
				Soft	Hard	Date	Month	Date	Month	Date	Month	Date	Month	Contact	1st	2nd	3rd	4th		
TAIPEI																				
Site A (1)		25-20N 121-13E	III (Single)	1													65	65		U.C.
Site B (2)		25-18N 121-13E	III (Single)	1														65		U.C.
Site C (3)		25-20N 121-13E	III (Single)	1														65		U.C.
Site D (4)		25-17N 121-13E	III (Single)	1														65		U.C.
Site E (5)		25-18N 121-13E	III (Single)	1														65		U.C.
Site F (6)		25-18N 121-13E	III (Single)	1														65		U.C.
VERBNAVA-SALDA																				
Site A (1)		38-08N 122-16E	III	2													62		61	Operational
Site B (1)		38-08N 122-16E	III	2															61	Operational
Site C (1)		38-10N 122-16E	III	2														62		Operational
Site D (1)		38-12N 122-16E	III	2															62	Operational
Site E (1)		38-14N 122-16E	III	2															62	Operational
Site F (1)		38-16N 122-16E	III	2															62	Operational
Site G (1)		38-18N 122-16E	III	2															62	Operational
Site H (1)		38-20N 122-16E	III	2															62	Operational
Site I (10)		38-09N 122-16E	III	2															63	Operational
ALBORO																				
Site A (1)		37-18N 121-26E	III	2														62		Operational
Site B (1)		37-18N 121-26E	III	2														62		Operational
Site C (1)		37-18N 121-26E	III	2														62		Operational
Site D (1)		37-18N 121-26E	III	2														62		Operational
Site E (1)		37-18N 121-26E	III	2														62		Operational
Site F (1)		37-18N 121-26E	III	2														62		Operational
Site G (1)		37-18N 121-26E	III	2														62		Operational
Site H (1)		37-18N 121-26E	III	2														62		Operational
YOSHIMURA																				
Site A (1)		36-35N 141-00E	III	2														62		Operational
Site B (1)		36-35N 141-00E	III	2														62		Operational
Site C (1)		36-35N 141-00E	III	2														62		Operational
Site D (1)		36-35N 141-00E	III	2														62		Operational
Site E (1)		36-35N 141-00E	III	2														62		Operational
Site F (1)		36-35N 141-00E	III	2														62		Operational
MURVA																				
Site A (1)		50-10N 101-25E	III	2														61		Operational
Site B (1)		50-09N 101-40E	III	2														62		Operational
Site C (1)		50-12N 101-25E	III	2														62		Operational
Site D (1)		50-16N 101-25E	III	2														62		Operational
Site E (1)		50-25N 101-17E	III	2														62		Operational
Site F (1)		50-21N 101-11E	III	2														63		Operational
Site G (1)		50-01N 101-51E	III	2														63		Operational
Site H (1)		50-11N 101-47E	III	2														63		Operational
Site I (1)		50-21N 101-25E	III	2														61		Operational
Site J (1)		50-06N 101-15E	III	2														61		Operational
Site K (1)		50-13N 101-14E	III	2														61		Operational
ZHANGZ-TORE																				
Site A (1) Probable		49-12N 121-00E	III (Single)	1														65		U.C.
Site B (2) Probable		49-16N 121-00E	III (Single)	1														65		U.C.
Site C (3)		49-11N 121-04E	III (Single)	1														65		U.C.
Site D (1)		49-10N 121-04E	III (Single)	1														65		U.C.
Site E (1)		49-08N 121-03E	III (Single)	1														65		U.C.
Total Deployed				434	150	119														

TOP SECRET CHESS RUFF

TOP SECRET CHESS RUFF

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TABLE 2. (Continued)

Location*	Site Number	Coordinates	Type of Site	Number of Launchers		Site Negated		First Coverage		Latest Coverage		Stage of Construction			Estimated Quarter Site Operational				Estimated Status
				Self	Host	Date	Mon	Date	Mon	Date	Mon	Cost	1st	2nd	3rd	4th			
TYRATAW																			
Complex A1 (1)		15-55N 63-21E	I	1															Operational
V2		15-55N 63-21E	I	1															Operational
Complex B1 (2)		15-54N 63-20E	III (Single)		1														U C
B2 (10)		15-50N 63-43E	III Prototype		1														Operational
B3 (17)		15-50N 63-43E	III (Single)		1														U C
Complex C1 (5)		15-48N 63-39E	II Prototype		1														Operational
C2		15-48N 63-39E	II		1														Operational
C3		15-48N 63-39E	II		1														Operational
Complex D1 (4)		15-50N 63-57E	IIIA Prototype		3														U C
D2 (9)		15-50N 63-57E	III		3														Operational
Complex E1 (6)		15-54N 63-13E	III Prototype		1														Operational
E2		15-48N 63-13E	III		1														Operational
E3		15-48N 63-13E	III		1														Operational
Complex F1 (3)		16-02N 62-50E	IIIB Prototype		1														Operational
Complex G1 (2)		16-02N 62-50E	I		2														U C
G3 (4)		16-02N 62-50E	I		2														U C
G5 (6)		16-02N 62-50E	II		2														U C
G7 (4)		16-02N 62-50E	III (Single)		1														U C
G9 (2)		16-04N 62-57E	III		2														U C
Complex H1 (2)		15-50N 63-13E	I		2														Operational
Complex I1 (1)		15-50N 63-20E	III (Single)		1														U C
Complex J1 (1)		16-04N 63-03E	III		2														U C
Complex K1 (1)		16-04N 63-03E	III		2														U C
Total				18	17														

*The site designators are indicated in parentheses.

1. III A includes one additional probable site (III A).

2. See Introduction, page 6.

3. See Introduction, page 9.

TOP SECRET CHESS RUFF

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*The site designators are indicated in parentheses.
 1. DIA is late; one additional probable site (cited).
 2. See Introduction, page 6.
 3. See Introduction, page 6.

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TABLE 3. SUMMARY EVALUATION OF SOVIET IRBM DEPLOYMENT

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR
AKTYUBINSK Launch Complex KARAKHOBDA PETROVSKIY		49-58-15N 56-51-15E 50-00-30N 56-56-00E	IV IV	3 3		Mid Complete
BAYRAM-ALI Launch Complex BAYRAM-ALI		37-45-45N 62-11-00E	III	4		Complete
BELOMORSK Launch Complex RAMOYE		64-25-45N 34-18-15E	III	4		Complete
FEDOROVKA Launch Complex TRAKTOVYY		53-25-15N 62-23-00E	III	4		Complete
GELLI Launch Complex KAKASHURA GELLI PARAUL		42-38-45N 47-27-00E 42-26-30N 47-26-30E 42-47-30N 47-23-00E	IV IV IV	3 3 3		Complete Complete Complete
GRANOV Launch Complex GRANOV 1 GRANOV 2 KALNIK		48-56-15N 29-30-15E 48-50-00N 29-28-45E 48-59-30N 29-21-45E	III IV IV	4 3 3		Complete Complete Complete
KROLEVETS Launch Complex KROLEVETS 1 KROLEVETS 2 BEREZA		51-36-45N 33-29-30E 51-40-45N 33-31-15E 51-43-45N 33-43-45E	III III III	4 4 4		Complete Complete Complete
LEBEDIN Launch Complex LEBEDIN 1 LEBEDIN 2 LEBEDIN 2		50-33-00N 34-25-45E 50-33-45N 34-24-30E 50-38-00N 34-27-30E	III III III	4 4 4		Complete Complete Complete
NIGRANDE Launch Complex NIGRANDE SKRUNDA VAINODE		56-31-00N 22-02-15E 56-35-30N 21-49-15E 56-28-30N 21-50-15E	III IV IV	4 3 3		Complete Complete Complete
NOVOSYSOYEVKA Launch Complex NOVOSYSOYEVKA 1 NOVOSYSOYEVKA 2 NOVOSYSOYEVKA 3		44-11-45N 133-26-15E 44-07-15N 133-28-30E 44-07-30N 133-23-45E	III IV IV	4 3 3		Complete Complete Early
PERVOMAYSK Launch Complex KAMENNYI MOST SEMENOVKA 1 SEMENOVKA 2		47-58-00N 30-53-15E 47-58-45N 30-59-00E 47-53-30N 30-58-45E	IV IV IV	3 3 3		Complete Complete Complete

TOP SECRET CHESS RUFF

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25X1		TABLE 3. (Continued)					25X1	25X1
LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR		
SARY OZEK Launch Complex								
KARA BABAU 1		44-32-00N 77-46-15E	III	4		Complete		
KARA BABAU 2		44-31-00N 77-58-45E	IV	3		Complete		
KARA BABAU 3		44-30-15N 77-41-15E	IV	3		Complete		
SMORGON Launch Complex								
SMORGON 1		54-31-45N 26-17-30E	III	4		Complete		
SMORGON 2		54-26-00N 26-18-30E	IV	3		Complete		
SMORGON 3		54-36-15N 26-22-30E	III	4		Complete		
TAYBOLA Launch Complex								
TAYBOLA 1		68-28-00N 33-15-30E	IV	3		Complete		
TAYBOLA 2		68-30-30N 33-23-15E	IV	3		Complete		
TAYBOLA 3		68-26-00N 33-29-15E	IV	3		Mid		
ZHURAVKA Launch Complex								
ZHURAVKA		54-36-30N 76-39-45E	III	4		Complete		
*TDI site designators have been adopted for IRBM Launch Sites.								

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TABLE 4. SUMMARY EVALUATION OF SOVIET MRBM DEPLOYMENT

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR.
AKHTYRKA Launch Complex						
AKHTYRKA 1		50-16-00N 34-50-15E	II	4		Complete
AKHTYRKA 2		50-22-00N 34-57-00E	II	4		Complete
ALUKSNE Launch Complex						
LEJASCIEMS 1		57-21-00N 26-44-45E	II	4		Complete
RISKI		57-23-15N 26-50-00E	II	4		Complete
LEJASCIEMS 2		57-13-00N 26-33-30E	IV	4		Complete
ANASTASIEVKA Launch Complex						
ANASTASIEVKA 1		45-34-15N 135-37-45E	II	4		Complete
ANASTASIEVKA 2		45-35-45N 135-41-00E	II	4		Complete
BALTA Launch Complex						
BALTA 1		48-01-15N 29-34-00E	II	4		Complete
BALTA 2		48-07-00N 29-34-30E	II	4		Complete
BARANO-ORENBURGSKOYE Launch Complex						
SOFIYE ALEKSEYEVSKOYE		44-16-15N 131-22-30E	I	4		Complete
BARANO-ORENBURGSKOYE		44-19-45N 131-20-45E	I	4		Complete
BELOKOROVICHI Launch Complex						
OLEVSK 1		51-08-45N 28-03-15E	I	4		Complete
OLEVSK 2		51-10-30N 27-59-30E	I	4		Complete
RUDNYA ZLOTINSKAYA		51-03-30N 28-07-30E	IV	4		Complete
BORSHCHEV Launch Complex						
SKALA PODOLSKAYA 1		48-51-00N 26-08-30E	I	4		Complete
SKALA PODOLSKAYA 2		48-52-45N 26-03-30E	I	4		Complete
BREST Launch Complex						
BREST 1		51-48-45N 24-00-45E	II	4		Complete
BREST 2		51-51-45N 24-01-45E	II	4		Complete
BRODY Launch Complex						
BRODY 1		50-06-00N 25-12-15E	IV	4		Complete
BRODY 2		50-12-16N 25-05-00E	I	4		Complete
BERESTECHKO		50-20-00N 25-05-30E	I	4		Complete
BYKHIV Launch Complex						
SLEDYUKI		53-41-30N 30-20-30E	II	4		Complete
DERAZHNYA Launch Complex						
DERAZHNYA 1		49-21-00N 27-26-30E	II	4		Complete
DERAZHNYA 2		49-26-15N 27-29-00E	II	4		Complete
KHIMELNITSKIY		49-24-45N 27-08-45E	IV	4		Complete

TOP SECRET CHESS RUFF

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR
DISNA Launch Complex						
DISNA		55-35-15N 28-16-00E	I	4		Complete
ZELKI		55-35-45N 28-24-30E	I	4		Complete
BORKOVICHI		55-41-45N 28-27-00E	II	4		Complete
DOLINA Launch Complex						
DOLINA 1		49-03-30N 24-03-30E	I	4		Complete
DOLINA 2		49-06-15N 24-08-30E	I	4		Complete
BOLEKHOV		49-06-45N 23-51-15E	IV	4		Complete
DROGOBYCH Launch Complex						
MEZENITSA		49-22-15N 23-45-30E	I	4		Complete
DROGOBYCH		49-25-30N 23-34-15E	I	4		Complete
STRYY		49-16-15N 23-43-00E	IV	4		Complete
DYATLOVO Launch Complex						
DYATLOVO		53-32-15N 25-16-45E	I	4		Complete
BEHEZOVKA		53-35-30N 25-17-30E	I	4		Complete
ZBLYANY		53-35-45N 25-27-30E	II	4		Complete
GOMEL Launch Complex						
BORKHOV 1		52-18-30N 30-42-45E	II	4		Complete
BORKHOV 2		52-24-45N 30-39-00E	II	4		Complete
GRESK Launch Complex						
GRESK 1		53-14-15N 27-42-30E	I	4		Complete
GRESK 2		53-17-00N 27-40-45E	I	4		Complete
URECHYE		53-11-00N 27-56-30E	II	4		Complete
GROZNYI Launch Complex						
SUNZHENSKOYE		43-08-15N 44-54-15E	I	4		Complete
NESTEROVSKAYA		43-11-30N 44-57-00E	I	4		Complete
ACHKHIV-MARTAN		43-10-30N 45-10-30E	IV	4		Complete
GUSEV Launch Complex						
GUSEV 1		54-41-30N 22-05-00E	I	4		Complete
GUSEV 2		54-44-00N 22-03-30E	I	4		Complete
GVARDEYSK Launch Complex						
GVARDEYSK 1		54-40-30N 21-07-30E	I	4		Complete
GVARDEYSK 2		54-45-15N 21-09-15E	I	4		Complete
JELGAVA Launch Complex						
IECAVA 1		56-35-30N 24-04-00E	II	4		Complete
IECAVA 2		56-39-45N 24-07-30E	II	4		Complete
IECAVA 3		56-33-00N 24-20-30E	IV	4		Complete

TOP SECRET CHESS RUFF

TOP SECRET CHESS RUFF

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR
JONAVA Launch Complex		54-57-15N 24-05-45E	II	4		Complete
KARMELAVA		55-01-00N 24-14-15E	II	4		Complete
JONAVA						
KAMENETS-PODOLSKIY Launch Complex		48-51-15N 26-42-30E	II	4		Complete
KAMENETS-PODOLSKIY		48-55-15N 26-50-00E	II	4		Complete
DUNAYEVTSY						
KIVERTSY Launch Complex		50-53-15N 25-31-00E	I	4		Complete
KIVERTSY 1		50-56-00N 25-36-15E	I	4		Complete
KIVERTSY 2		50-58-30N 25-50-30E	II	4		Complete
TROSTYANETS						
KOSKOVICH Launch Complex		52-10-30N 28-34-45E	I	4		Complete
PETRIKOV		52-15-30N 28-37-45E	I	4		Complete
KOSKOVICH						
KOROSTEN Launch Complex		50-51-45N 28-18-15E	II	4		Complete
KOROSTEN 1		50-52-15N 28-31-00E	II	4		Complete
KOROSTEN 2						
KOZHANOVICH Launch Complex		52-10-15N 27-51-30E	I	4		Complete
KOZHANOVICH 1		52-11-30N 27-48-00E	I	4		Complete
KOZHANOVICH 2						
KRASKINO Launch Complex		42-44-00N 130-40-15E	II	4		Complete
KRASKINO						
KRASNOZNAMENSK Launch Complex		55-01-30N 22-23-00E	I	4		Complete
VIESVILLE		55-01-15N 22-11-15E	I	4		Complete
RAGNIT						
KREMOVO Launch Complex		44-01-24N 132-20-39E	I	4		Complete
KREMOVO		44-02-30N 132-26-26E	I	4		Complete
LYALICH						
KURGANCH Launch Complex		39-37-45N 65-57-30E	I	4		Complete
KURGANCH 1		39-37-30N 65-57-00E	I	4		Complete
KURGANCH 2		39-35-15N 65-42-45E	IV	4		Complete
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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF FADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR
LIDA Launch Complex						
LIDA 1		53-47-30N 25-20-30E	I	1		Complete
LIDA 2		53-57-15N 25-27-45E	I	1		Complete
LUTSK Launch Complex						
LUTSK 1		50-46-45N 25-03-00E	I	1		Complete
LUTSK 2		50-30-30N 25-04-15E	I	1		Complete
VLADIMIR-VOLANSKIY		50-48-30N 24-42-30E	IV	1		Complete
MARINA GORKA Launch Complex						
MARINA GORKA		53-26-30N 27-45-30E	II	1		Complete
MAYKOP Launch Complex						
KURDZHIPS KAYA		44-31-45N 40-00-45E	II	1		Complete
SHIRVANS KAYA		44-25-30N 39-54-00E	IV	1		Complete
MOLOSKOVITSY Launch Complex						
MOLOSKOVITSY 1		59-28-15N 29-06-00E	II	1		Complete
MOLOSKOVITSY 2		59-29-30N 29-12-15E	II	1		Complete
GURLEVO		59-25-00N 28-53-15E	IV	1		Complete
MU KACHEVO Launch Complex						
MU KACHEVO 1		48-18-45N 22-30-45E	I	1		Complete
MU KACHEVO 2		48-19-30N 22-37-15E	I	1		Complete
NADYORAYA Launch Complex						
PARYSICHE		48-37-45N 24-42-00E	I	1		Complete
NOVA VES		48-39-30N 24-48-15E	I	1		Complete
OTYNYA		48-47-30N 24-50-30E	IV	1		Complete
OSTROG Launch Complex						
OSTROG 1		50-14-00N 26-43-15E	I	1		Complete
OSTROG 2		50-17-15N 26-41-00E	I	1		Complete
OSTROV Launch Complex						
ASANOVSICHINA		57-31-45N 28-12-15E	I	1		Complete
SHEVELEVO		57-37-00N 28-12-15E	I	1		Complete
REDKINO		57-24-30N 28-26-00E	IV	1		Complete
PAPLAKA Launch Complex						
PAPLAKA 1		56-24-00N 21-17-30E	I	1		Complete
PAPLAKA 2		56-25-00N 21-16-45E	I	1		Complete
PINSK Launch Complex						
IVASOVO		52-10-45N 25-41-15E	I	1		Complete
MOTOL		52-12-30N 25-44-30E	I	1		Complete

TOP SECRET CHESS RUFF

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TABLE 1. (Continued)

LOCATION	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR
POLOTSK Launch Complex						
POLOTSK 1		55-22-30N 28-44-30E	II	4		Complete
POLOTSK 2		55-24-15N 28-33-45E	II	4		Complete
POSTAVY Launch Complex						
POSTAVY 1		55-09-45N 26-53-45E	II	4		Complete
KOZYANY		55-20-30N 26-51-30E	II	4		Complete
POSTAVY 2		55-06-15N 27-00-15E	IV	4		Complete
PRUZHANY Launch Complex						
PRUZHANY 1		52-30-30N 24-08-45E	II	4		Complete
PRUZHANY 2		52-33-30N 24-06-15E	II	4		Complete
RAKVERE Launch Complex						
SMUSA		59-06-45N 26-26-45E	II	4		Complete
VAIKE MAARJA		59-11-15N 26-20-45E	II	4		Complete
RISTI Launch Complex						
RISTI 1		58-04-00N 24-04-30E	I	4		Complete
RISTI 2		58-07-45N 24-06-45E	I	4		Complete
ROZHDESTVENKA Launch Complex						
ROZHDESTVENKA		45-47-15N 133-43-30E	II	4		Complete
RUZHANY Launch Complex						
KRUPA 1		52-47-45N 24-42-30E	II	4		Complete
KRUPA 2		52-49-15N 24-45-30E	II	4		Complete
SATEIKIAI Launch Complex						
SALANTAI 1		55-50-45N 21-38-15E	I	4		Complete
SALANTAI 2		56-02-15N 21-41-30E	I	4		Complete
ZEMAITU KALVARIJA		56-01-45N 21-54-30E	IV	4		Complete
SMFEROPOL Launch Complex						
MAZANKA		44-53-45N 24-20-00E	I	4		Complete
VALKI		44-57-00N 24-26-00E	I	4		Complete
SLOINIM Launch Complex						
BYTEN 1		52-52-30N 25-21-30E	I	4		Complete
BYTEN 2		52-55-45N 25-22-15E	I	4		Complete
SOKAL Launch Complex						
SOKAL 1		50-22-45N 24-18-15E	I	4		Complete
SOKAL 2		50-27-15N 24-20-00E	I	4		Complete
SOKAL 3		50-20-15N 24-26-15E	IV	4		Complete

TOP SECRET CHESS RUFF

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR
SOVETSK Launch Complex						
SLAVSK 1		54-59-15N 21-36-30E	I	4		Complete
SLAVSK 2		54-59-15N 21-28-30E	I	4		Complete
SUCHAN Launch Complex						
NOVITSKOYE		43-01-45N 133-17-00E	I	4		Complete
SEVERNY SUCAN		43-10-00N 133-20-05E	I	4		Complete
TAURAGE Launch Complex						
TAURAGE 1		55-10-15N 22-20-30E	I	4		Complete
TAURAGE 3		55-05-00N 22-20-00E	I	4		Complete
TORVA Launch Complex						
TORVA 1		57-56-00N 26-04-00E	I	4		Complete
TORVA 2		57-50-15N 26-05-00E	I	4		Complete
TSIRGULINA		57-49-45N 26-12-30E	IV	4		Complete
UGOLNYY Launch Complex						
UGOLNYY		64-47-32N 177-56-15E	II	4		Complete
UKMERGE Launch Complex						
VEPRIAI		55-07-15N 24-38-30E	I	4		Complete
UKMERGE		55-11-00N 24-42-30E	I	4		Complete
UMAN Launch Complex						
MOLODETSKOYE		48-53-15N 30-27-45E	I	4		Complete
MANKOVKA		48-57-15N 30-23-45E	I	4		Complete
KISHENTSY		49-00-15N 30-13-45E	IV	4		Complete
USOVO Launch Complex						
OVRUCH 1		51-17-15N 28-16-15E	I	4		Complete
OVRUCH 2		51-18-30N 28-10-30E	I	4		Complete
LIPNIKI		51-12-15N 28-26-30E	II	4		Complete
UZHGOROD Launch Complex						
UZHGOROD		48-33-30N 22-13-15E	II	4		Complete
VORU Launch Complex						
VORU 1		57-46-00N 26-47-15E	II	4		Complete
VORU 2		57-49-00N 26-50-30E	II	4		Complete
VSELYUB Launch Complex						
VSELYUB 1		53-45-45N 25-43-00E	I	4		Complete
VSELYUB 2		53-48-00N 25-46-45E	I	4		Complete
YELSK Launch Complex						
YELSK 1		51-42-30N 29-12-30E	I	4		Complete
YELSK 2		51-47-15N 29-18-15E	I	4		Complete

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR
ZAGARE Launch Complex						
ZAGARE 1		56-23-15N 23-19-15E	I	4		Complete
ZAGARE 2		56-29-00N 23-20-45E	I	4		Complete
LJELELEJA		56-24-30N 23-36-45E	IV	4		Complete
ZHITOMIR Launch Complex						
ZHITOMIR 1		50-04-45N 28-15-45E	II	4		Complete
ZHITOMIR 2		50-10-00N 28-16-15E	II	4		Complete
BERDICHEV		50-05-30N 28-22-00E	II	4		Complete
ZHMERINKA Launch Complex						
GNIVAN		49-08-00N 28-11-45E	II	4		Complete
ZHMERINKA		49-10-15N 28-05-00E	II	4		Complete
VINNITSA		49-17-30N 28-20-15E	IV	4		Complete
ZNAMENSK Launch Complex						
ZNAMENSK 1		54-32-46N 21-11-15E	I	4		Complete
ZNAMENSK 2		54-35-15N 21-07-30E	I	4		Complete

*TDI site designators have been adopted for MRBM Launch Sites.

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TABLE 5. SUMMARY EVALUATION OF SOVIET FIXED FIELD SITES (SSM FIXED FIELD POSITIONS)

LOCATION*	BE NUMBER	COORDINATES	NEGATION DATE	FIRST OBSERVED	NO OF PADLIKE CLEARINGS
ALUKSNE Lejasciems		57-15-15N 26-41-15E			4
ANASTASYEVKA Anastasyevka		48-32-15N 135-31-45E			4
BELOKOROVICHI Rudnya Zlotin-skaya		51-08-30N 27-59-45E			3
BREST Pishcha		51-35-15N 23-46-45E			3
BRODY Yazlovchik Stanislavchik		50-05-45N 25-02-00E 50-07-00N 24-56-30E			4 1
DERAZHNYA Khmelnitskiy Letichev 1 Letichev 2		49-25-00N 27-06-30E 49-22-45N 27-43-45E 49-25-15N 27-45-00E			2 4 2
DISNA Devnovichi		55-47-45N 28-20-00E			4
DOLINA Berezhnitsa		49-12-45N 23-57-30E			4
DYATLOVO Ruda Yavorskaya 1 Ruda Yavorskaya 2 Ruda Yavorskaya 3		53-23-15N 25-10-30E 53-23-15N 25-12-45E 53-23-15N 25-13-30E			4 5 4
GOMEL Gomel		52-20-45N 30-51-30E			4
GUSEV Tolminkensk		54-22-15N 22-20-15E			4
GYARDEYSK Geroyskoye Vysokoye		54-45-45N 21-25-15E 54-44-30N 21-33-45E			2 4

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TABLE 5. (Continued)

LOCATION	BE NUMBER	COORDINATES	NEGATION DATE	FIRST OBSERVED	NO OF PADLIKE CLEARINGS
JELGAVA					
Jelgava 1		56-38-45N 23-52-45E			2
Jelgava 2		56-44-15N 23-55-15E			4
JONAVA					
Kaistiadorys		54-59-30N 24-29-00E			4
KAMENETS-PODOLSKIY					
Yarmolintsy		49-12-00N 26-46-45E			4
KIVERTSY					
Kivertsy		50-50-00N 25-25-00E			4
KONKOVICHI					
Novoselki 1		52-23-00N 28-42-45E			4
Novoselki 2		52-25-45N 28-44-00E			4
KOROSTEN					
Litki 1		51-01-30N 28-27-45E			4
Yemilehino		50-52-30N 27-53-00E			4
Litki 2		51-01-15N 28-24-15E			2
KRASNOZNAMENSK					
Krasnoznamensk		54-57-30N 22-35-00E			4
Sudafgas		55-00-30N 22-35-00E			4
LIDA					
Vasilishki		53-44-00N 24-56-15E			4
LUTSK					
Gorokhov		50-35-45N 24-48-45E			4
MARINA GORKA					
Shotsk		53-27-45N 27-48-00E			4
MAYKOP					
Tulskaya		49-31-15N 40-14-15E			4
Maykop		44-32-30N 39-57-45E			3
NADVORNAYA					
Ivanovtsy		48-38-00N 24-54-15E			4
OSTROG					
Slavuta		50-16-45N 26-57-45E			2
Shepetovka		50-12-30N 26-59-00E			4

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TABLE 5. (Continued)

LOCATION*	BE NUMBER	COORDINATES	NEGATION DATE	FIRST OBSERVED	NO OF PADLIKE CLEARINGS
OSTROV Shabany		57-23-45N 28-13-15E			4
PINSK Lychkovtsy		52-15-00N 25-21-45E			4
POLOTSK Plissa 1		55-12-30N 26-01-45E			3
Plissa 2		55-11-30N 27-54-45E			4
POSTAVY Sivtsy		55-09-30N 26-53-45E			1
Bogatoye		54-57-15N 26-28-45E			4
PRUZHANY Strigovo		53-23-15N 24-14-30E			4
Shcherby		52-23-00N 24-10-00E			4
RUZHANY Shehitno 1		52-43-15N 24-58-15E			4
Shehitno 2		52-41-00N 24-57-30E			4
SATEIKIAI Telsiai		55-56-45N 23-07-00E			4
Alsedziai		56-00-15N 22-06-00E			4
SLONIM Byten		52-54-30N 25-22-00E			2
SMORGON Smorgon		54-34-45N 26-21-30E			2
TAURAGE Skudvile		55-23-00N 22-31-00E			4
Taurage		55-10-00N 22-14-30E			2
TORVA Valga		57-50-15N 25-54-15E			4
UKMERGE Gelvonai		55-07-15N 24-43-45E			4
Balninkai		55-13-00N 25-02-00E			4

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TABLE 5. (Continued)

LOCATION*	BE NUMBER	COORDINATES	NEGATION DATE	FIRST OBSERVED	NO OF PADLIKE CLEARINGS
USOVO Luginy		51-08-00N 28-23-00E			4
YELSK Yelsk		51-50-45N 29-05-15E			1
ZAGARE Dobele 1		56-40-00N 23-11-45E			1
Dobele 2		56-40-45N 23-06-45E			1
ZHITOMIR Berdichev		49-51-30N 28-25-30E			2
ZHMERINKA Vinnitsa		49-13-15N 28-18-45E			4
Bar		49-05-30N 27-43-00E			4
ZNAMENSK Pravdin-sk		51-23-00N 20-59-45E			3
Domnovo		51-25-30N 20-53-00E			4

*TDI site designators have been adopted for the fixed field sites, which are listed under the nearest permanent IRBM/MRBM complex.

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TABLE 6. COMPOSITION OF IRBM/MRBM COMPLEXES

No of Complexes	Containing Soft Sites Only				Containing Hard Sites Only			Containing Hard and Soft Sites		
	One Site, No Housing or Support Facility	One Site	Two Sites	Three Sites	One Site	Two Sites	Three Sites	Two Soft One Hard Site	One Soft One Hard Site	One Soft Two Hard Sites
IRBM	4			2				1		4
	2									
	5				0	1	3			
	5									
MRBM	5									
	43	1	36	6				20	1	
	21									
TOTALS	84	9	36	8	0	1	3	21	1	4

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